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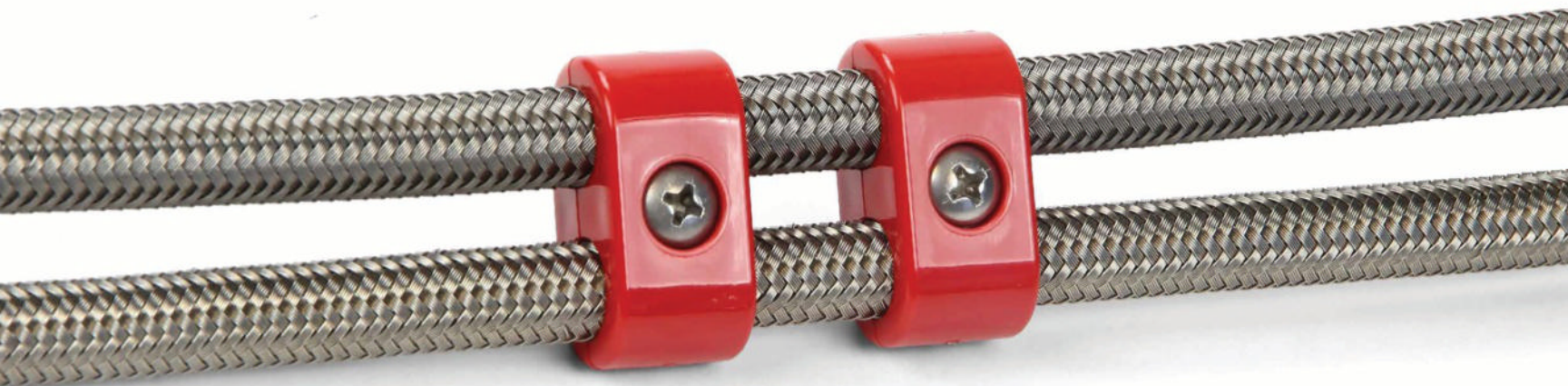


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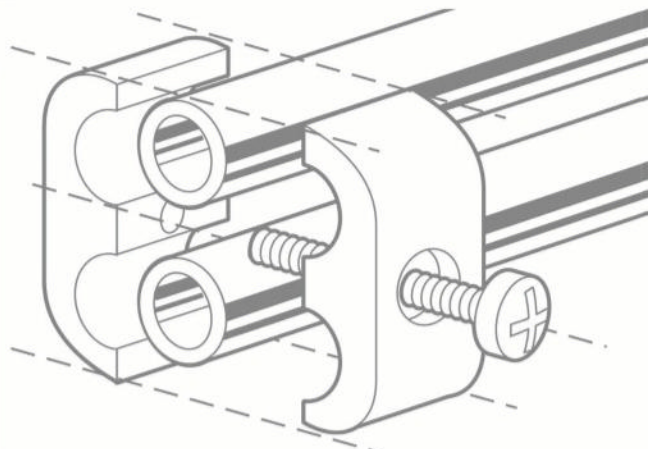




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ON THE COVER

It's not often a third-gen Camaro earns a spot on the cover of *All Chevy Performance*, but Octavio Tapia's 1988 IROC-Z breaks the mold. With its killer blend of performance and street-savvy attitude, this standout ride stole the spotlight for our Nov. '25 issue. Check out the full feature starting on page 16.

Cover image by Jason Matthew.



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BY NICK LICATA

DON'T TAKE 'EM FOR GRANTED

Living in America offers the best of so many things that shape our daily lives. Whether it's being able to watch baseball almost any day of the week from April through October—my favorite time of year—or having the freedom to drive the coolest classic muscle cars around, but I try not to take those things for granted. Sure, Europe has football (soccer), which is part of daily life, and their exotic supercars, with highly advanced engineering, have a huge following, but to most folks those types of cars are unobtainable due to their exorbitant cost. I understand the attraction, but to me nothing beats good old American muscle. The look and sound of these cars are what hooked me from an early age.

Lucky for us, America is widely regarded as the hot rod and muscle car capital of the world due to the U.S. automotive industry recognizing in the early 1960s there was a market for performance cars. This helped shape a national love affair with stylish vehicles that were both fast and loud.

But before then, the hot rod concept was born in post-World War II America when young veterans returned from military duty armed with mechanical, fabrication, and welding skills and applied that knowledge to modify old Fords and Chevys to go faster and look cooler. Southern California was the epicenter of such behavior thanks to wide-open roads and dry lake beds—both breeding grounds for straight-line racing. This activity paved the way for an explosion of creativity in both form and function, leading to the development of organized dragstrips providing

a safer racing environment. It also sparked the emergence of a new aftermarket performance parts industry.

In the 1960s, Detroit cemented America's dominance with the introduction of the muscle car—factory-built bruisers like the Chevrolet Camaro, Ford Mustang, and Dodge Charger—delivering raw horsepower capturing the spirit of the time while aiming their sights on a new generation of young drivers looking for the excitement and independence behind the wheel of a great-looking, V-8-powered vehicle.

What sets America apart from other countries is the car culture—cruise nights, car shows, drag racing, and garages filled with homebuilt projects reflecting our obsession with classic muscle cars and hot rods.

While other countries have made contributions to performance cars with high-end exotics, it's America's passion for blending bold style, raw performance, and limitless creativity that makes the muscle car movement more than just a hobby. It's a culture where enthusiasts build, personalize, and showcase their unique identity through their classic cars.

Next time you strap into your Chevy muscle car, instead of taking that car for granted, take it out and beat the snot out of it; and if something should break, repair and repeat.

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TEXT & RENDERING BY TAVIS HIGHLANDER

Black on black is the theme for this Pro Touring 1967 Camaro. On the exterior there are only mild modifications, like tucked bumpers and a cowl hood. Under that hood is a wild twin-turbo LS, so the goal was to have a subdued exterior that doesn't let on too much. There are clues this is a real runner though. The low stance and HRE G-Code wheels create a nice pop without being distracting. **AC**



'80s ROCK

BY NICK LICATA ■ IMAGES BY JASON MATTHEW

OCTAVIO TAPIA'S 1988 IROC-Z

The third-gen Camaros were insanely popular after rolling off the Van Nuys and Norwood assembly lines between 1982 and 1992. Over 1.7 million made their way into the hands of Camaro enthusiasts who took a liking to the car's new-at-the-time aerodynamic styling and overall sporty demeanor. Those looking for next-level performance in these cars went for the IROC-Z, which was introduced in 1985. Estimates suggest over 180,000 were sold between 1985 and 1990. The attraction? A race-inspired trim package, upgraded suspension for improved handling, and a high-output 305 and 350ci V-8 engines with tuned port injection delivering up to 245 hp by 1990. Not exactly earth-shattering power at the time, but due to government-mandated smog constraints, it was somewhat respectable, kind of.









To Octavio Tapia, the IROC-Z was “it,” and in fact, his first car was a 1987 IROC used as his daily driver back in the early ’90s. His father, Domingo, a professional automotive painter, had just given the Camaro a fresh dousing of blue pigment when a lady plowed into the car while it was parked on the street near his home. Luckily no one was hurt, but the insurance company claimed the car as “totaled,” so Octavio used the insurance money to buy another Camaro—this time a 1988 IROC, which he got his senior year of high school back in 1993 and has owned ever since.

In 1996, Octavio enlisted in the Navy, and while serving his country for four years, Octavio’s dad once again pulled out his spray gun and cloaked the Camaro in a fresh coat of Porsche Red. Soon after returning from service, Octavio grabbed the keys and took his freshly painted Camaro on the 2000 *Hot Rod Power Tour*. It was a road trip that took him from San Bernardino, California, to Panama City, Florida. “I had such a blast on my first Power Tour, so I went on to do three more,” Octavio says. “On the 2006 Power Tour, the car had mechanical issues, so I brought it home and parked it in the driveway where it sat wounded for 14 years due to family commitments and life in general.

That all changed in 2020. With family life more settled, Octavio got the itch to get the Camaro back on the road, so he took it to Hawks Motorsports in Easley, South Carolina, for a drivetrain, suspension, and interior revitalization.

Hawks enlisted the service of a modern LS3 underhood and stuffed it with a Brian Tooley Racing Stage 3 blower cam (blower coming soon) and bolted on PRC heads paired with GM fuel injection and Hawks/Stainless Works long-tube headers, which feed into a stellar-sounding GMMG chambered exhaust. The ensemble cranks out 525 hp, turning this third-gen into a respectable street machine that runs meaner than it ever did in its heyday.

To handle the IROC’s newfound power, the drivetrain was beefed up with a TREMEC F-body six-speed transmission fitted with ZR1 internals by the crew at Drivetrain Dynamics. Out back, a Hawks-built 8.8-inch rearend was narrowed 1.5 inches on each side and features a Truetrac posi unit and 3.55 gears.



Improved handling comes by way of Detroit Speed & Engineering tubular front control arms, sway bar kit, KYB adjustable shocks, Eibach springs, and a Detroit Speed three-point strut tower brace. Out back, Hotchkis lower trailing arms, UMI torque arm, KYB shocks, and Eibach springs tie the car together. A Detroit Speed quick-ratio steering box gives the car improved turning response and exceptional driver feedback.

Baer 13-inch rotors and four-piston calipers on all four corners ensure outstanding braking performance, while a Baer master cylinder and GM booster provide smooth and balanced pedal operation.

The IROC rolls on 18-inch Weld Racing S77 wheels wrapped in Nitto NT555 rubber for top-notch traction putting the improved suspension system to task.

Octavio's Camaro doesn't just drive like a modern muscle car—it feels like one inside, too. Black leather and suede upholstery with red stitching gives the captain's quarters a refined, performance vibe. The fifth-gen Camaro ZL1 seats were adopted to fit on brackets built by Tim Waters and work in concert with a red Seatbelt Planet safety system.

Dakota Digital Retro gauges and Grant steering wheel keep the classic vibe in check, while a Kenwood touch screen entertainment system is mated to JL Audio amps, speakers, and 12-inch sub creating a high-quality audio experience when Octavio chooses his jams to override the brilliant note coming from that classic chambered exhaust system.

Octavio's father and uncle Jose, performed the bodywork, smoothing the sheetmetal to a perfect canvas prior to spraying a brilliant layer of Sherwin-Williams Torch Red—an eye-popping finish that stays true to the car's IROC roots. A Hawks Sunoco cowl fiberglass hood and Hawks splitter along with the custom-painted grille enhance the factory components.

Lighting was upgraded with Holley Retrobright headlights, Morimoto XB foglights by Screaming Chicken, and Starbuck Innovative Design LED markers and signals. Hoffman Design door handles add a touch of billet coolness.

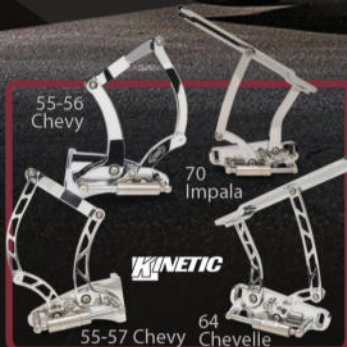
Octavio's IROC-Z isn't just another '80s restomod—it's a performance machine wrapped in a personal legacy that spans three decades. Although it was once left dormant, the car was never forgotten. From teenage dream machine to modern-day street beast, Octavio Tapia's IROC-Z is proof that with the right mix of horsepower and reliability, this Camaro got better with age. It's a true rock of the '80s. **ACP**



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Eddie Motorsports '69 Pro Touring Camaro



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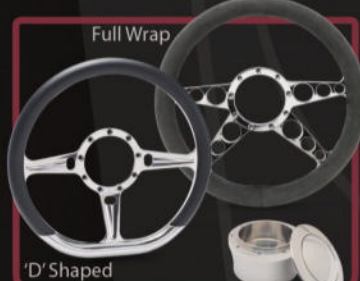


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Engine

TYPE: LS3

DISPLACEMENT: 376 ci

COMPRESSION RATIO: 17.7:1

BORE: 4.065 inches

STROKE: 3.622 inches

BUILDER: Hawks Motorsports (Casley, SC)

MACHINEWORK: Hawks Motorsports

ROTATING ASSEMBLY: Nodular iron crankshaft, powdered connecting rods, hypereutectic aluminum pistons

CAMSHAFT: Brian Tooley Racing, Stage 3 blower cam

CYLINDER HEADS: PRC

INDUCTION: GM

FUEL INJECTION: GM

EXHAUST: Hawks/Stainless Works 1 $\frac{7}{8}$ headers, GMMG chambered exhaust

VALVE COVERS: GM

ACCESSORY DRIVE: Holley Mid-mount

ANCILLARIES: Wizard Cooling aluminum radiator, Ringbrothers hood hinges

OUTPUT: 525hp

Drivetrain

TRANSMISSION: TREMEC F-body Magnum ZR1 internals by Drivetrain Dynamics

CLUTCH: GM

SHIFTER: Hawks short-throw shifter

REAR AXLE: Hawks Motorsports 8.8-inch rearend (narrowed 3 inches), 3.55 gears

Chassis

FRONT SUSPENSION: Detroit Speed & Engineering tubular control arms, Detroit Speed three-point strut tower brace kit, KYB adjustable shocks, Eibach springs, Detroit Speed 1 $\frac{3}{8}$ -inch sway bar

REAR SUSPENSION: Hotchkis lower trailing arms and Panhard bar, UMI torq arm, KYB adjustable shocks, Eibach springs

STEERING: Detroit Speed quick-ratio steering box

BRAKES: Baer 13-inch rotors, four-piston calipers, Baer master cylinder, GM brake booster

Wheels & Tires

WHEELS: Weld Racing S77 18x9.5 front, 18x10 rear

TIRES: Nitto NT555 G2 275/35R18 front, 295/40R18 rear

Interior

UPHOLSTERY: Black leather and suede with red stitching

INSTALLATION: Jonathan Customs

SEATS: Fifth-gen Camaro ZL1

SEATBELTS: Seatbelt Planet

STEERING: Grant steering wheel

DASH: Dakota Digital

INSTRUMENTATION: Dakota Digital Retro (Hawks)

HVAC: Factory

INSULATION: Kilmat

ENTERTAINMENT SYSTEM: Kenwood Display, JL Audio amps, JL Audio speakers, JL Audio 12-inch sub

INSTALLATION: Ken Balas at Precision Motorsport (Metuchen, NJ)

Exterior

BODYWORK AND PAINT: Domingo and Jose Tapia

PAINT: Sherwin-Williams Torch Red

HOOD: Hawks fiberglass

GRILLE: Stock, custom painted

FRONT BUMPER: Stock with Hawks splitter

REAR BUMPER: Stock

HEADLIGHTS: Holley Retrobright

TAILLIGHTS: Stock

ADDITIONAL LIGHTING: Screaming Chicken Morimoto XB foglights, Starbuck Innovative Designs vented marker/turn signal lights

DOOR HANDLES: Hoffman Design & Engineering



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PRODUCTS



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NOTE: Your vehicle wiring harness must match the mentioned features.

PART NUMBER **FR30030BK-XX**

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PART NUMBER

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1.

1. Classic Chevys look cool, and the best way to keep them operating that way is with an electric fan, like this brushless design from Proform.

BY RON CERIDONO

FAN DANCE

ALL CHEVY PERFORMANCE [26] VOLUME 5 • ISSUE 59 • 2025

SOURCES

PROFORM
proformparts.com

SPAL USA
www.spalautomotive.com

VINTAGE AIR
(800) 862-6658
vintageair.com

In Part 1 of our series on engine cooling (Volume 5, Issue 54) we began looking at cooling system components starting with radiators. This time around we'll look at another critical component: engine cooling fans.

For a cooling system to be effective there are three basic necessities: a proper water pump, an efficient radiator, and adequate airflow through the radiator core. In many cases, once a vehicle is moving at speed, 30 mph or so, the flow of air through the radiator is sufficient to keep the engine cool. But when your car is moving slowly, or worse yet when it's stationary, an effective fan may be the difference between the cooling system maintaining a safe operating temperature and steam coming out of the engine compartment and a river of coolant running down the street.

When it comes to selecting a fan there is a variety to choose from:

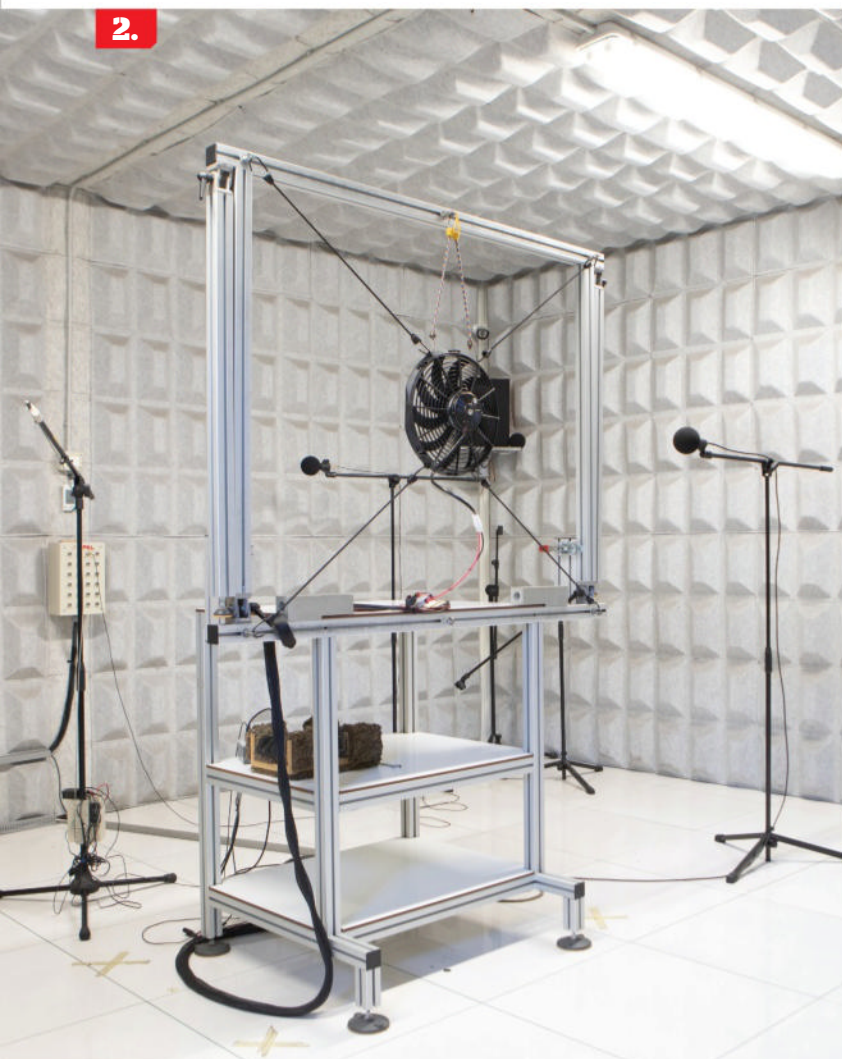
MECHANICAL FANS

Engine-driven mechanical fans are simple, cheap, effective, and have been used since the dawn of the automobile. Early on, two-blade fans were common, but as engines became more powerful and the demands on the cooling system were greater it became necessary to increase

airflow, so more fan blades with greater pitch were added. While markedly more efficient when it comes to moving air, the drawbacks to more aggressive fans are the increased power it takes to drive them and the noise they make. On the plus side, when it comes to moving lots of air, an engine-driven fan is hard to beat.

A variation on the mechanical fan is the flex fan. Those of us who were around in 1962 may remember the green fiberglass flex fans that were introduced that year. Today flex fans are made from stainless steel, steel, or plastic but the idea is the same. The extreme pitch of the flex fan's blades will pull lots of air at low speeds, then flatten out at higher speeds for less drag.

Clutch fans are found on many OEM applications. They use a rigid fan attached to a clutch that slips under specific circumstances. There are three types of clutch fans commonly found: the viscous/torque type have some slip all the time that limits their speed to a percentage of the water pump speed, the viscous/temperature-controlled type slip less as temperature rises, increasing fan speed, and the viscous thermostatic type that turns on and off at a predetermined temperature. With this style of clutch, the fan "idles" and doesn't run at engine speed until needed.



2. Here a SPAL fan undergoes testing. Airflow, power consumption, and sound levels are all measured.

3. Available from Vintage Air are curved-blade, brushed fans. They have become popular thanks to their lower noise level. Vintage Air also offers a line of brushless fans.

4. This is a typical straight-blade fan from Vintage Air with a brushed motor. They are affordable, effective, and available in push and pull configuration.



PART 2: KEEPING YOUR HOT ROD COOL

When a mechanical fan is used there should be at least 1 inch from the blades to the core and the blades should never extend past the core (unless a shroud is used). The difference between the lower static pressure at the core and the higher static pressure behind the tanks can cause the fan blade to flex forward. That may result in a weird pulsating sound or damage to the fan and radiator (see the accompanying photos for graphic proof).

FAN SPACERS

To properly locate a mechanical fan in relationship to a radiator or shroud it's often necessary to use a fan spacer, but not all spacers are created equal. Some cheap spacers are not very accurate, which may cause the fan not to run true, resulting in vibration and premature water pump wear. If a spacer is necessary, use a machined aluminum spacer and limit its length to 3 inches.

ELECTRIC FANS

Electric fans are found as "pushers" to be mounted in front of the radiator and "pullers" to be mounted on the engine side of the radiator. Tom Longo of SPAL recommends a puller for most applications when there is room for them to fit on the engine side of the radiator. This is especially true in vehicle applications where ram air is strong enough to cool the engine at speed. Rear-mounted puller fans don't block any natural "through radiator" airflow and can therefore generally turn off at highway speed, saving power.

When comparing fans Ryan Salata, of Proform, points out electric fans have several advantages over the mechanical type in terms of performance. Salata adds, "Mechanical fans are belt-driven, so the fan's performance is tied to the engine's rpm and horsepower that would otherwise be transmitted to the wheels is instead going to the fan. Additionally, in low-rpm situations, such as sitting at a traffic light, a mechanical fan may not generate enough airflow for the required cooling."

5. This dual 11-inch fan assembly from Vintage Air (PN 32111-SDF) uses twin SPAL brushed motors. Note the "flaps" at the top of the shroud.

5.



6. Shrouds are a great addition to making any fan more effective. In this case the shroud doubles as a mounting bracket. Here, louvers are used to reduce pressure in front of the radiator with the car at speed.

7. This is Proform's 12-inch, brushless, straight-blade fan (PN 67034). It's rated at 2,100 cfm, draws 15 amps, and is 3 inches thick.

6.



7.



9. SPAL's brushless 10-inch flush-mount puller fan (PN 30107089) is rated at 1,345 cfm. Often used in dual-fan installations, it's 3.30 inches thick.

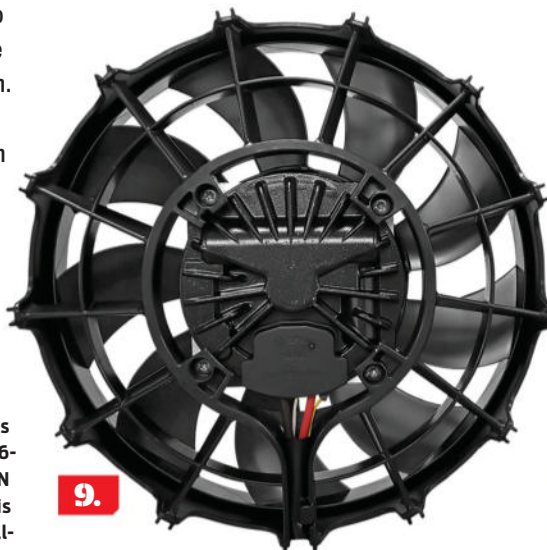
10. This is a 15-inch SPAL brushless fan (PN 31007125). It's rated at 1,972 cfm with a 300-watt motor. It's controlled by SPAL's variable speed temperature sensor.

8.



8. Proform's Brushless 16-inch fan (PN 67037). This S-blade puller-style fan is rated at 3,300 cfm and draws 24.3 amps.

9.



10.



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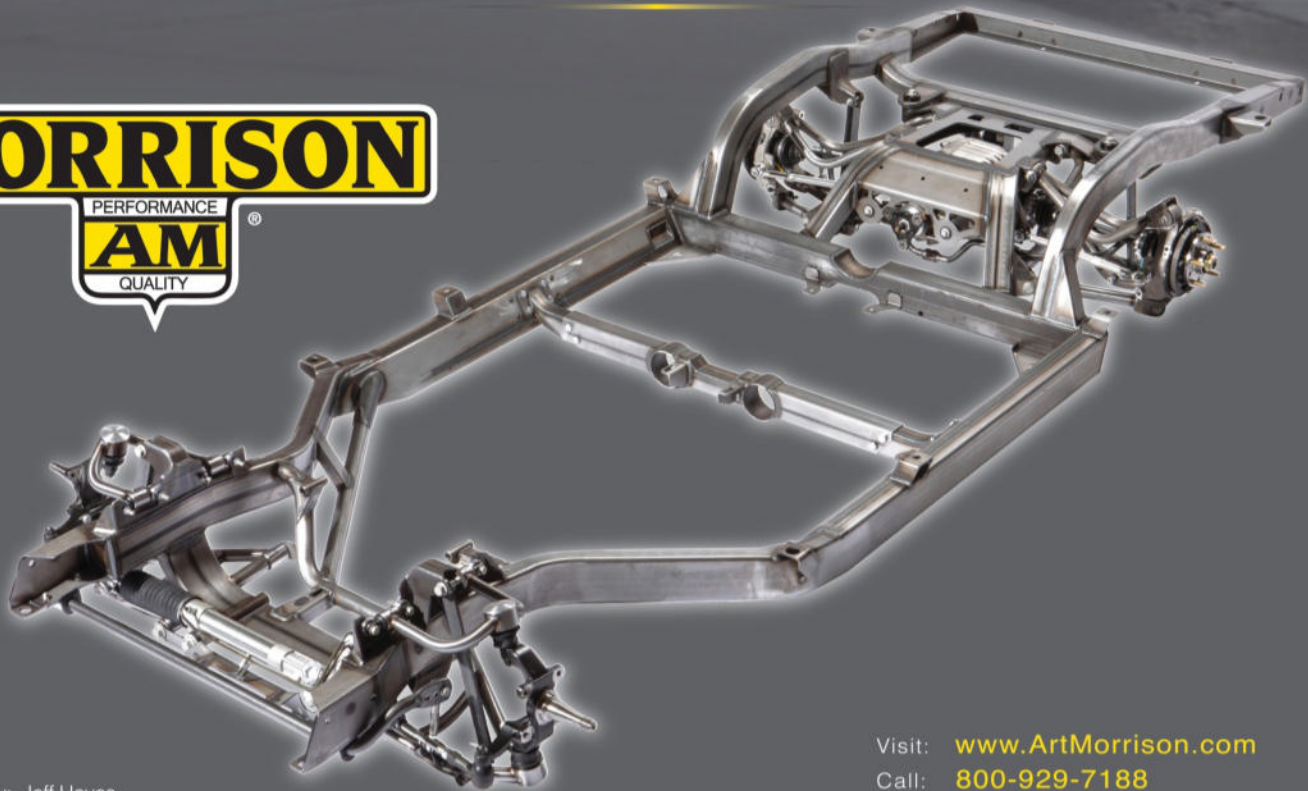


Photo Courtesy: Jeff Hayes

With an established reputation of building exemplary restomods, this incredible 1967 C2 reached — and surpassed — the million-dollar mark, selling for \$1,100,000 and setting a record for a custom Corvette at auction when it crossed the Barrett-Jackson auction block.

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When choosing an electric fan there are several considerations, and one of the most often used for comparison is cubic feet per minute (cfm) rating. However, something called static pressure can change that rating dramatically. Salata explains it. “Static pressure is created when something is blocking the air that the fan is trying to pull through. In automotive use, that something is the radiator and any other coolers that are stacked in front of the fan; cfm drops as static pressure increases. At Proform, fans are rated at zero static pressure.”

SPAL's Tom Longo adds, “Pressure can vary system to system depending on the thickness of the radiator, the fin spacing, and even type of fins. The static pressure of a given system directly relates to how hard the fan must work to move the air. Generally, the higher powered a fan is the more pressure it can overcome. There are a few other factors, such as the shape of the fan blades and the size of the fan, that influence the fan's ability to overcome pressure. But even this varies from application to application.”

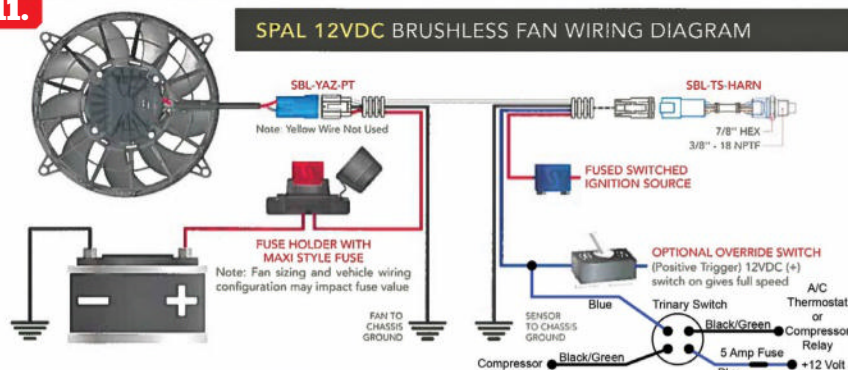
Another common means of comparing fans is the power of the motor. However, motor power alone doesn't rate how much air moves. Other factors, such as blade design, speed, and pressure resistance, heavily influence performance. Proform suggests fan performance is better measured by airflow (cfm) and airflow efficiency—the amount of power required to move a certain volume of air represented by the Fan Energy Index (fei) or cfm per watt rather than using the motor's power as the determining factor.

Other important factors when selecting an electric fan are the diameter of the blades and their design. As much of the radiator core as possible should be covered, and in some cases that may require dual fans. Another consideration is the type of fan blades—they may be straight or curved. In operation, S-blade fans are quieter, whereas straight-blade fans generally move more air. For a normal street rod, SPAL suggests using a curved blade fan. For more high-performance applications, a straight blade fan is recommended.

BRUSHLESS FANS

A variant of electric engine cooling fans are the brushless designs found on many modern cars. Traditional brushed motors use a stator to create a magnetic field around the rotor, which is the rotating part inside the motor. The rotor has windings that generate a magnetic field when powered, causing the motor to spin. Brushes contact these windings inside the rotor and switch the current, causing the magnets to repel and attract, which in turn causes the rotor to spin. However, the brushes wear out over time due to physical contact. Brushless motors replace mechanical contacts (the brushes) with electronic communication, causing the magnets to attract and repel. With no brush contact, wear and tear is reduced dramatically. No brush contact extends the lifespan of the brushless fan motor and also improves its reliability.

11.



PART	SIZE	MOUNT STYLE	MOTOR	FUSE VALUE*	PUSH/PULL	CFM	HEIGHT	WIDTH	DEPTH
30107089	10"	FLUSH MOUNT	300W	40 AMP MAXI FUSE	PULL	1345	11.00"	11.00"	3.30"
30107059	11"	DROP-IN MOUNT	300W	40 AMP MAXI FUSE	PULL	1442	12.80"	12.80"	3.00"
30107087	12"	DROP-IN MOUNT	300W	40 AMP MAXI FUSE	PULL	1802	13.10"	13.10"	3.00"
30107102	14"	DROP-IN MOUNT	500W	50 AMP MAXI FUSE	PULL	2395	15.00"	15.00"	3.10"
30107103	14"	DROP-IN MOUNT	300W	40 AMP MAXI FUSE	PULL	2003	15.00"	15.00"	3.10"
30107125	15.2"	FLUSH MOUNT	300W	40 AMP MAXI FUSE	PULL	1972	15.70"	15.70"	3.20"
30107101	16"	DROP-IN MOUNT	500W	50 AMP MAXI FUSE	PULL	2430	17.00"	17.00"	3.20"
30107090	16"	DROP-IN MOUNT	300W	40 AMP MAXI FUSE	PULL	2053	17.00"	17.00"	3.10"

*Recommended fuse values only. Vehicle must support fuse rating. If unsure or you have questions regarding recommended fuse values, please contact SPAL technical support at (800) 454-7725.

PART	DESCRIPTION
SBL-TS-165P	MINIMUM "ON" SPEED AT 140°F // INCREASING TO 100% "FULL" SPEED AT 165°F
SBL-TS-185P	MINIMUM "ON" SPEED AT 165°F // INCREASING TO 100% "FULL" SPEED AT 185°F
SBL-TS-215P	MINIMUM "ON" SPEED AT 190°F // INCREASING TO 100% "FULL" SPEED AT 215°F

11. SPAL's reference chart includes a brushless wiring diagram with basic fan and temperature sensor information.

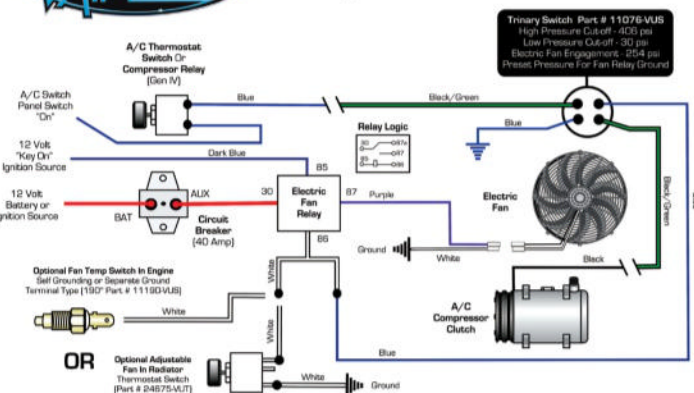
12 Controlling brushed electric fans can be done with a simple thermal switch. This example from Speedway Motors includes a relay and wiring harness. It turns the fan on at 185 degrees and off at 165 degrees.

12.



Typical Electric Fan Relay Wiring With Trinary Switch

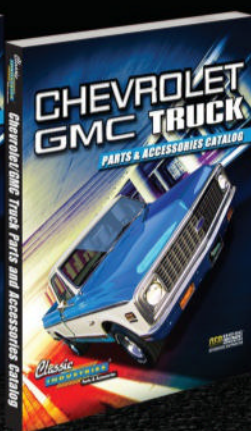
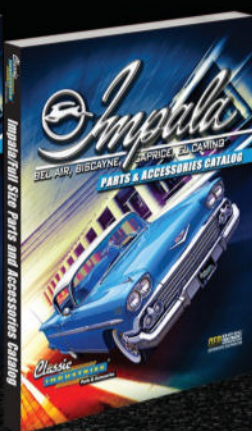
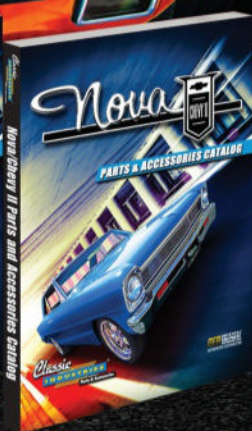
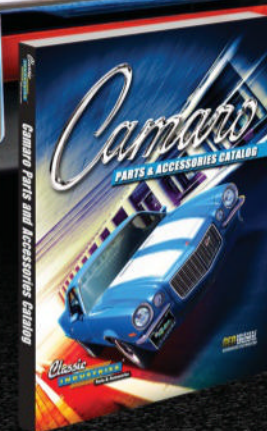
Note: Trinary Switch Connection for Part Number 11076-VUS Shown



13.

13. This diagram from Vintage Air shows how to connect a trinary switch to turn on a brushed cooling fan when the A/C is activated.

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Another advantage to the brushless fan is the “soft start,” or the slow ramp-up in fan speed. That slow start means there is no amp spike from the large initial electrical draw when a brushed fan starts.

To control their operation, brushless motors typically utilize Pulse-Width Modulation (PWM), a type of digital signal that simulates analog signals by switching the output on and off at a very rapid rate. Proform brushless fans eliminate the need for engine-specific controllers by utilizing a built-in, advanced voltage regulation system to control the fan motor speed with a single-wire connection.

ELECTRIC FAN CONTROLLERS

There are various fan controls, from simple to complex. Basic controls use a thermal switch with high and low set points that turn a relay on and off to control the fan. This style switch should turn the fan on approximately 15 to 20 degrees higher than the thermostat's opening temperature and off around the thermostat's opening temperature. More complicated controllers have adjustable on and off set points, are capable of controlling variable speed or dual fans, will activate the fan(s) when the A/C is turned on, and will allow the fan(s) to run for a period of time after the engine is shut off.

A variation on fan controller design is the PWM (pulse width modulation) type. These controllers use on and off electrical pulses to control the motor. The duration of “on time” is determined by a temperature sensor. In turn, the controller alters the width of the pulse to regulate the speed of the motor as needed. Basically, the longer the on pulse the higher the voltage and the faster the motor spins.

ELECTRICAL CONSIDERATIONS

Electric fans can consume anywhere from 4 to 36 amps or more depending on the size of the fan and the efficiency of the motor. Keep in mind that when a brushed electric fan starts the current, draw will spike and be considerably higher for an instant. As a result of the electrical demands from an electric fan it's important that an adequate alternator is part of the charging system. Check with the fan supplier for their electrical system recommendations.

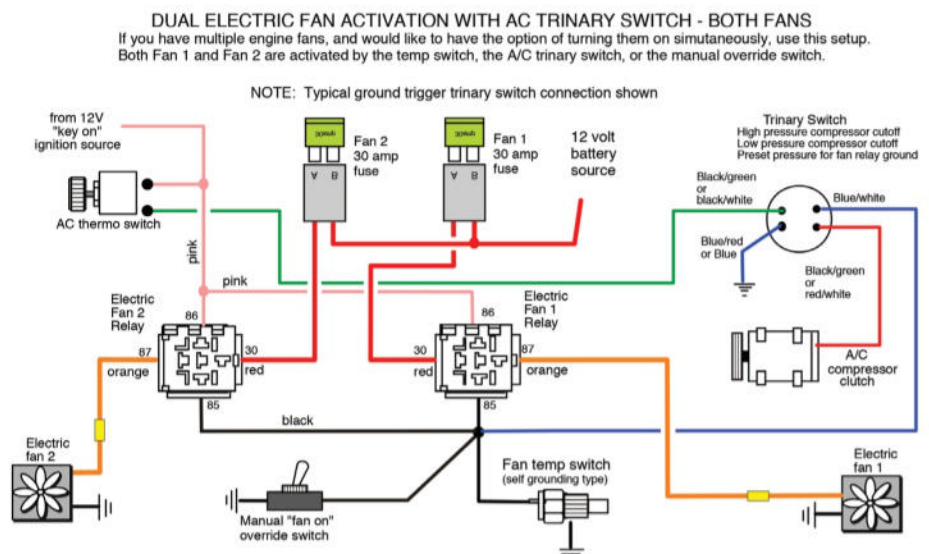
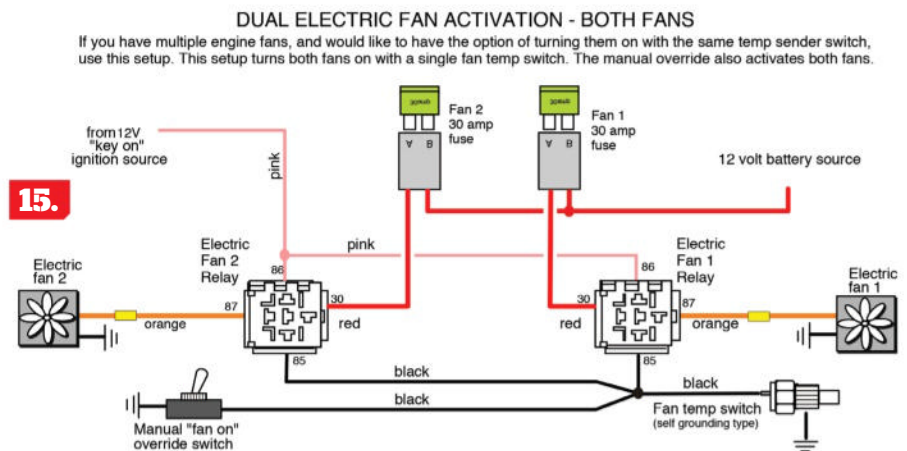
SHROUDS

Regardless of the type of fan installed, a shroud is a wise addition. Without a shroud the fan is only pulling air through an area equal to the size of the blades. A shroud will help pull air across the radiator's entire core. Shrouds also provide a great way to mount an electric fan to the radiator. It should be noted that shrouds are meant to be used with puller fans, and a proper seal of the shroud to the radiator is important to ensure the greatest benefit from using a shroud.



14. American Autowire offers this dual-fan control kit with two 40-amp relays, 30-amp fuses, and 210- to 195-degree temperature switch. It can be configured for automatic or manual operation for one or both fans.

15. American Autowire's dual-fan control can operate separate fans individually, with or without an A/C trinary switch.



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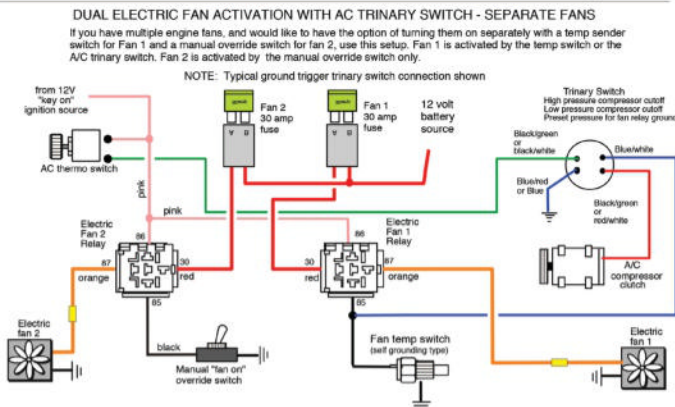
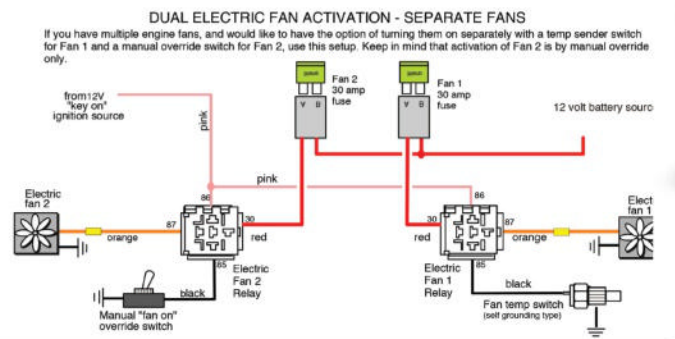
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16. 16. The American Autowire dual fan control can also be wired to run both fans simultaneously, with or without an A/C trinary switch.



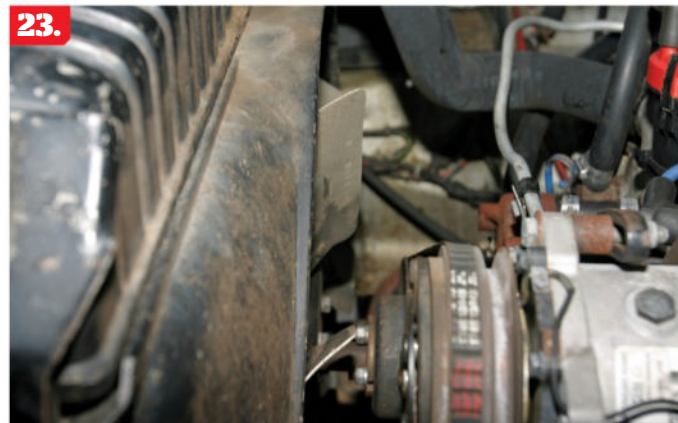
20. As the OEMs began installing thicker radiators and mounting A/C condensers in front of them, more aggressive fans were necessary to move more air. They moved lots of air but were noisy and could take up to 30 hp to spin.



21. Flex fans were introduced to reduce drag and the resulting horsepower loss. At low speeds the curved blades move a high volume of air, as engine speed increases the blades flatten, reducing drag.

22. Thermostatic fan clutches began to appear in the 1960s; they are used with rigid fans to reduce parasitic loss by "slipping" at low engine temperatures or high engine speeds.

23. Fan shrouds are always a good idea regardless of the type of fan used. For optimum performance, the blades of a mechanical fan should be half in and half out of the shroud.



17. 17. Proform's multi-speed controller for brushless fans (PN 67039) allow the fan's speed and duration to be adjusted manually. The digital display requires a simple three-wire hookup.

18. Dakota Digital's PAC-2800BT fully programmable, brushed motor fan controller provides on and off set points and key off run time after shutdown (0 to 5 minutes). It will work with many existing temperature gauges, or with dedicated sender, is capable of operating dual fans, and can be programmed via a Bluetooth connection.



19. 19. Seemingly forever cars were equipped with fixed-blade, mechanical fans from the factory, usually with four blades. They were effective enough and the noise they made wasn't considered an issue.





24. To properly locate a mechanical fan, a spacer is often required. Speedway Motors offers spacers in 1-, 1½-, 2-, 2½-, and 3-inch lengths.

25. We pointed this out several times before, but we still see it done. Fan blades should never extend past the radiator's core (especially flex fans when a shroud isn't used). As the blades go past the core and pass by the tank(s), increased static can cause the blades to flex forward.

26. Here's the result of fan blades extending past the radiator core. Two blades flexed forward, caught the edge of the lower tank, and this is the result.



A unique feature often found on shrouds for electric fans are "flappers" or air vents. At speed, airflow through the radiator may be restricted by the fan (particularly when off). The vents, or flappers, relieve this pressure, allowing more airflow through the radiator.

A FEW FINAL THOUGHTS

For such a basic device, there are many options when choosing an engine cooling fan, and mechanical and electric fans each have advantages. In most performance applications, the trick is to pull air through as much of the radiator core as possible with the biggest fan that will fit. Add a shroud if possible and you can be confident your Chevy will keep its cool. **ACP**

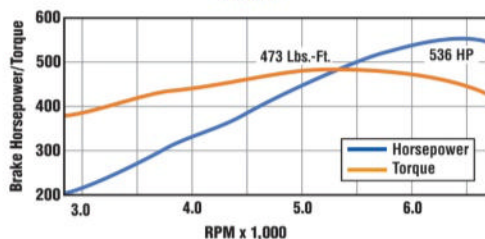


Yesterday's Looks, Today's Horsepower

Trick Flow's DHC™ 200 aluminum cylinder heads for small block Chevy feature exterior touches like straight spark plug holes and raised bosses on the ends just like the legendary OE double hump heads. On the inside though, it's all modern CNC-profiled goodness. New 64cc CNC-profiled combustion chambers and 2.055" intake valves combined with Trick Flow's CNC Street Porting process deliver big increases in high-RPM power and torque.

You even get to choose if you want accessory holes or not. Just paint them Chevy Orange and they're good to go.

Dyno Results DHC 200



Test Engine: 10.2:1 compression 384 c.i.d. with Trick Flow DHC™ 200 cylinder heads (TFS-30210003-C00), Trick Flow Track Max™ hydraulic roller camshaft (TFS-31402002), 1.6 ratio roller rocker arms, Trick Flow chromoly pushrods, Edelbrock Victor Jr. intake manifold, 750 cfm carburetor, Hooker Super Competition headers with 1½" primaries, 3" dual exhaust with Flowmaster mufflers.

Airflow Results DHC 200

Lift Value	Intake Flow CFM	Exhaust Flow CFM
.100"	68	56
.200"	140	109
.300"	200	148
.400"	244	180
.500"	275	204
.600"	286	217
.700"	290	227

Tests conducted at 28" of water (pressure).
Bore size: 4.030"; exhaust with 1½" pipe.

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BY TOMMY LEE BYRD ■ IMAGES BY THE AUTHOR

When it comes to converting an old muscle car into a modern-day performer, you have plenty of options. The aftermarket support for Chevy muscle cars is excellent, and you can pick and choose components to dial in the handling and performance of your car. Kevin Biggs has owned this 1966 Chevelle SS396 for several years and has put thousands of miles on it, thanks to a stout 502ci big-block and TREMEC six-speed manual transmission. The car had some mild modifications, like lowered suspension and disc brakes, but he was ready to take it to the next level. For this, he called upon Dan Kauffman and Derek Bradley at Pooles Mill Rods in Cumming, Georgia, for a complete chassis and drivetrain swap to turn his street cruiser into an aggressive Pro Touring monster.

KEVIN BIGGS CONVERTED HIS '66 CHEVELLE INTO A SERIOUS PRO TOURING MACHINE

Kevin studied his options, and it was determined that a full chassis upgrade was more practical than piecemealing a suspension system on the stock frame. Speedtech Performance got the call for one of its Extreme series frames, which features box welded construction, added bracing, and a long list of upgraded mounting positions, providing vastly improved suspension and steering geometry. The Speedtech chassis uses tubular control arms up front, along with a pair of JRi double-adjustable coilovers and a splined sway bar for a bulletproof combination. Sweet Manufacturing rack-and-pinion steering makes for quick steering response. The frontend features Speedtech forged spindles, utilizing C7 Corvette hubs, which offers easy fitment of Baer 14-inch rotors and six-piston calipers.





ATTITUDE ADJUSTMENT









Out back, Speedtech uses a torque arm setup rather than a conventional factory four-link, offering added stability. Another pair of JRi coilovers ride out back, and the rear suspension is kept level with a splined sway bar. The 54-inch-wide, 9-inch rearend features 3.70:1 gears, 31-spline axles, and a Detroit Truetrac differential. Another pair of 14-inch Baer disc brakes roll out back. Rolling stock consists of Forgeline AL203 wheels, sized 18x11 up front and 18x12 out back, and Kevin is running a square tire size configuration of 315/30R18 for incredible grip.

For horsepower, Kevin had grown comfortable with the thirsty big-block but he wanted more, so he opted for an LS swap to bring the Chevelle into the modern era. He chose a Chevrolet Performance LS7, which was already an outstanding combination, producing 505 hp in naturally aspirated form. Pooles Mill Rods swapped the stock cam for a Brian Tooley Racing PDS Stage 3 camshaft and associated valvetrain components. The bottom end and cylinder heads are all stock, but the top end features a Whipple 2.9L supercharger, which makes 7 pounds of boost with a moderate pump gas tune. The car put down 760 hp to the wheels thanks to the tuning efforts of Lance Disharoon at Millcreek Calibration.

The engine features Ultimate headers, and a custom 3-inch stainless steel exhaust by Dan Kauffman. The blown LS7 is kept cool with a Wizard Cooling radiator and dual SPAL electric fans. Kauffman built the intake piping as well as the engine bay closeout panels. He also massaged the inner fenders to accept the extremely wide tires and wheels and smoothed the stock firewall. A great mixture of black and gray finishes gives the engine bay a killer look. Kevin reused the TREMEC T-56 six-speed that was in the car before.

Kevin wanted to retain the car's aesthetics, so great care was taken to protect the paint, trim, and glass during the chassis and engine swap. The paint and body has some age on it but still presents well and it allows Kevin to get out and drive without worrying about chips. The only modifications to the original sheetmetal included a new trunk pan, wider wheeltubs, and a raised rear floor section to provide adequate suspension travel for the ultra-low stance. Inside, he upgraded from stock bucket seats to TMI buckets but retained the original console. Pooles Mill Rods 3-D printed the A/C control bezel as well as the center A/C vents, giving it a truly custom look.

The chassis swap process only took a few months and Kevin's Pro Touring conversion was ready to hit the highway. Since completion, Kevin has enjoyed the added horsepower and handling capabilities of his Chevelle, as it's a night-and-day difference from the old setup. The stance, the wheels, and the immense horsepower provide a big-time wow factor, while the unchanged body and interior still remind him of all the fun times he's had in the car through the years.

Kevin gave his Chevelle a serious attitude adjustment, and the guys at Pooles Mill Rods helped get this build across the finish line in a timely manner. Kevin is thrilled with the results and enjoys ripping his old Chevelle through the East Tennessee back roads every chance he gets. 



TECH

OWNER: Kevin Biggs, Ooltewah, Tennessee

VEHICLE: 1966 Chevrolet Chevelle SS

Engine

TYPE: LS7

DISPLACEMENT: 427 ci

COMPRESSION RATIO: 11.0:1

BORE: 4.125 inches

STROKE: 4.000 inches

ROTATING ASSEMBLY: Forged crank, titanium rods, stock pistons

CYLINDER HEADS: GM castings, 259cc intake runners, 70cc combustion chambers

VALVETRAIN: 2.205/1.610 valves, Brian Tooley Racing valvesprings

CAMSHAFT: Brian Tooley Racing PDS Stage 3, 231/248 duration at 0.050, 0.617/0.595 lift

IGNITION: Stock coils

INTAKE: Whipple 2.9L supercharger

ASSEMBLY: Pooles Mill Rods

EXHAUST: Ultimate headers, custom 3-inch stainless exhaust, Flowmaster mufflers

ANCILLARIES: Holley valve covers, Wegner Automotive front drive system, Mighty

Mouse Solutions catch can

OUTPUT: 760 hp

Drivetrain

TRANSMISSION: TREMEC T-56 Magnum six-speed, McLeod clutch, Lakewood bellhousing

REAR AXLE: Narrowed 9-inch (54 inches), Detroit Truetrac, 31-spline axles, 3.70:1 gears

Chassis

FRAME: Speedtech Performance Extreme Series

FRONT SUSPENSION: Tubular control arms, splined sway bar, JRi coilovers

REAR SUSPENSION: Torque Arm, splined sway bar, JRi coilovers

BRAKES: Baer 14-inch rotors, six-piston calipers

MASTER CYLINDER: Baer

Wheels & Tires

WHEELS: Forgeline AL303 18x11 and 18x12

TIRES: Falken 315/30ZR18

Interior

SEATS: TMI bucket seats

STEERING: Ididit tilt column, Sparco steering wheel

CONSOLE: Stock with custom details by Pooles Mill Rods

SHIFTER: American Powertrain

DASH: Stock

INSTRUMENTATION: Auto Meter

HVAC: Vintage Air

AUDIO: Kenwood head unit, hidden speakers

Exterior

PAINT: Old paint, Madeira Maroon

HOOD: 1966 Super Sport

GRILLE: Stock

BUMPERS: Stock

LIGHTS: LED

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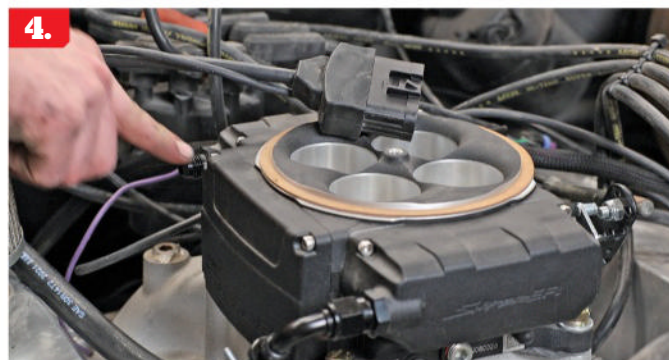
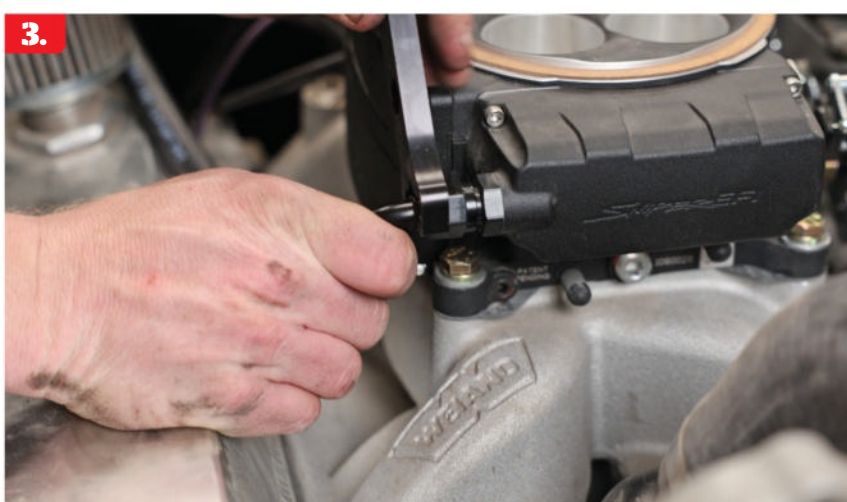
INSTALLING
HOLLEY'S SNIPER
2 EFI SYSTEM

Our kit is a bundle, which includes the all-in-one Sniper 2 throttle body, Hyperspark ignition system with distributor, and the coolest part of all, the PDM (Power Distribution Module). We opted to stick with the smaller 3.5-inch handheld, but for just \$150 more you can get the larger 5-inch screen. Our 1974 El Camino already had an in-tank fuel pump, so we did not select the Master Fuel Kit, but we did use the Holley regulator. For around \$2,000, we had everything needed to install EFI on our 383 stroker.



1. We started by dropping the new Hyperspark distributor into the 383 small-block. Note the clear cover over the rotor. This locks the unit in position; as long as the distributor is installed with the engine at TDC on Number 1, it's done.

2. Next, the throttle body was dropped onto the new Weiand intake. This throttle body fits any 4150-style intake.



3. We used Earl's push-on fittings for the fuel lines, which feed into the front of the throttle body.

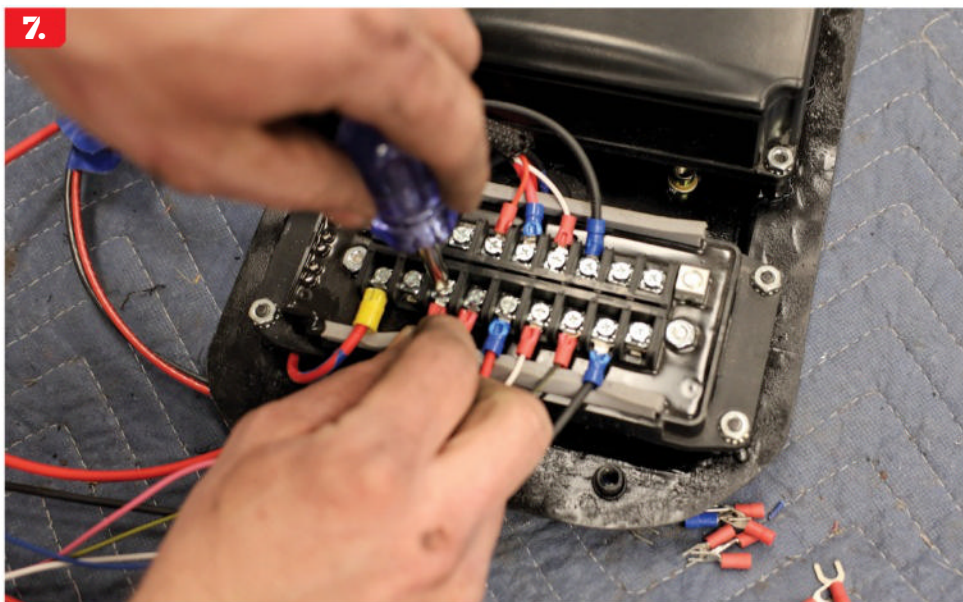
4. The rear fuel port is the return side to the regulator. This ensures that the throttle body has maximum fuel pressure at all times. Note the large by huge connector on top, which is the main harness plug.

5. A Holley fuel pressure regulator was used (same as comes with the Master Fuel Kit), which is preset for this system. We mounted this to the firewall behind the engine.

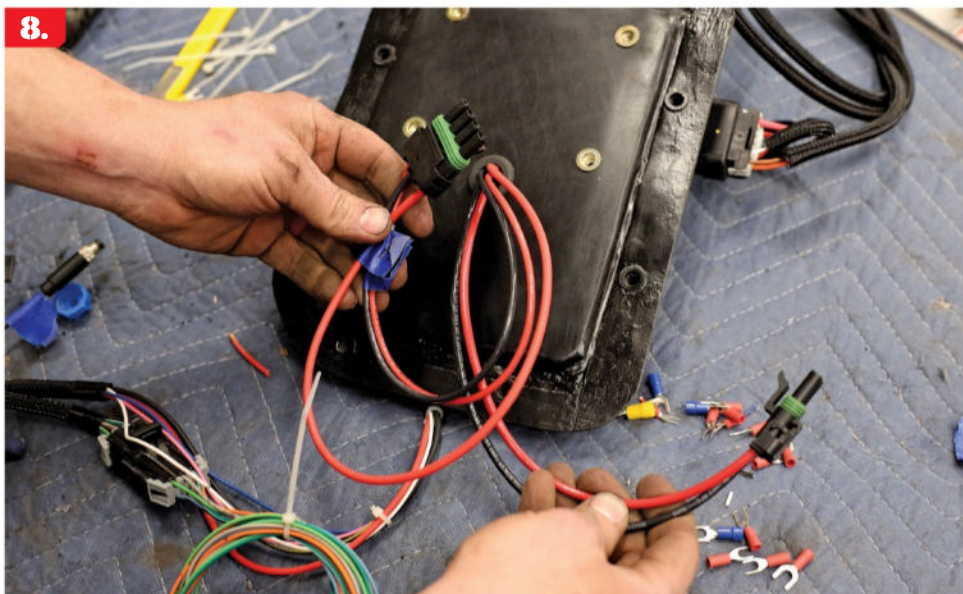
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7.



8.



There are a few interesting features to the Sniper 2: The ECM is located in the throttle body, which is not new, but this throttle body looks really good. The issue is that the plug for the main harness is very large, as in over 3 inches wide. We were able to use the large hole in the center of the firewall for the A/C hoses, but you would have to cut a large hole otherwise. We made a custom aluminum grommet plate to cover the hole. We mounted the ignition box and PDM on the inside of the firewall on a plate that we made to fill the A/C box hole in the firewall. The car will eventually get an aftermarket A/C system.

Because we opted for the Hyperspark ignition package, the whole install is greatly simplified, as everything wires up to the PDM and there are only a handful of wires that must be wired up. No relays are needed as long as the fans and fuel pump do not exceed the amp ratings on the PDM. We were able to wire up 90 percent of the system on the bench. The distributor installs at TDC and that's it. The rotor is locked in place with an alignment cap, which is removed after installation. This sets the timing at 0 degrees, and the ECM does the rest.

6. All EFI systems need an O2 sensor, so we welded in a bung on the passenger side about 14 inches after the collector for the best readings. You don't even need a welder; the kit comes with an O2 bung plate that seals with a gasket and a couple of worm clamps.

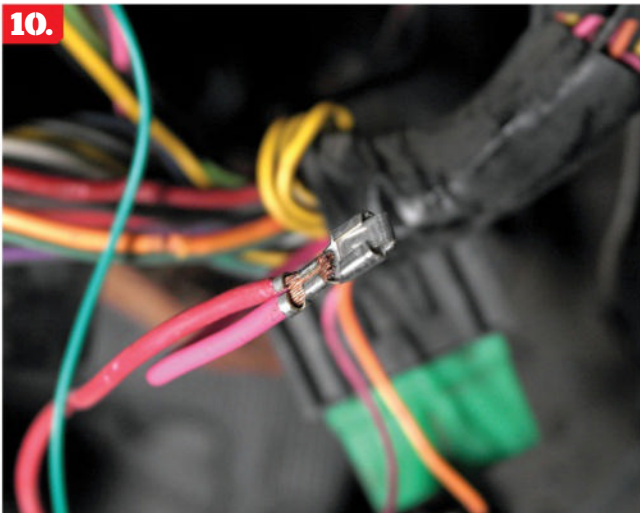
7. Next, we moved the bench where we have mounted the ignition box and PDM to our firewall plate. Most of the system can be pre-wired this way. Each terminal has a distinct function; this is so much simpler than any other kit we have used.

8. We tend to be a bit extra, so for serviceability, we made weatherpack plugs for all of the external wires (fuel, fan, battery). This gives us a factory look and it's just cool.

9. Once installed in the firewall, the wiring is super clean and organized. The PDM comes with a cover, which was installed after we started the engine.

9.





10.

10. The only wire to connect from inside the car is the ignition trigger. We opted to remove the main ignition (12 V in "Run" and "Start" positions) and add our new trigger wire with a new terminal. This looks better and eliminates a potential connection issue.

11. We used the A/C hose hole, which was convenient, however most cars don't have a giant hole like this, you have to make it.



11.



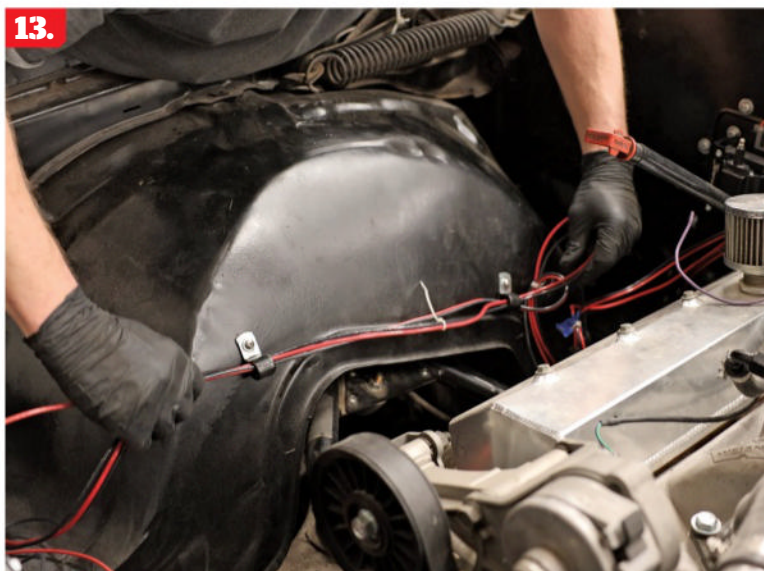
12.

Wiring is always the most frustrating part for most gearheads, especially on an EFI system. The PDM module is super easy to wire up as it handles all the power and ground points, so you can eliminate the jumble of wires on the battery post, and because we put the unit under the dash, it is pretty clean as well. The PDM also has LEDs for troubleshooting. This leaves you with main power and ground, 12V-plus ignition, fuel pump, and fans to wire up. We highly recommend pre-wiring the unit on the bench before moving to the vehicle to get an idea of the routing and wire bundling for a clean install. The rest of the wiring is plug-and-play for the coil and sensors.

12. The end results of our efforts paid off with this superclean firewall.

13. Using a few cable mounts, the battery and fan wires were bundled and routed to their destinations. Once the final terminations were made, we covered the wires with braided loom.

14. Unlike most other EFI installs, this car only has three wires on the battery post—starter, alternator, and the main power wire for the PDM.



13.



14.

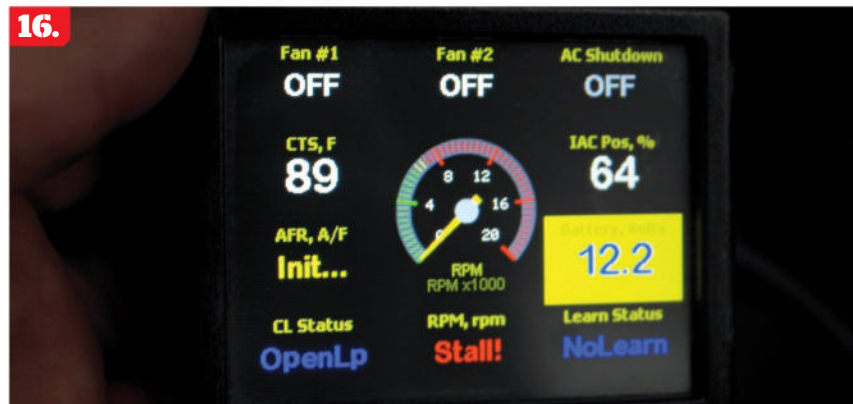
After finalizing the wiring we turned the key and the handheld powered up. There are 10 steps to programming the Sniper 2, selecting the basic engine parameters, a generic stock/street/race cam profile (based on vacuum, 8-13 inches use Street/Strip, 7 inches or less use Race), power adder, ignition, desired timing, and then save. Once the tune is saved, the engine is ready to start. As mentioned at the beginning of this article, we have installed a lot of EFI systems, aftermarket and OEM swaps. This is the first time any EFI system fired on the very first try—and in about three rotations at that. Color us impressed, it ran well off that base tune, wasn't pig rich like most initial starts are, and the idle smoothed out quickly. This is a self-tuning system, so over the next 1,000-1,500 miles, the engine will run better. You can also tune the ECM with a laptop, which allows you to access the advanced menus for fuel and timing maps, and so on.

Sniper 2 supports up to 650 hp NA or 575 hp with boost. This kit is simple enough to install over a weekend, so you can drive it to work on Monday. Fuel injection systems can be very complicated, but Holley has this one fully sorted; it is easier than you might think to install the full system. If you have been considering an EFI conversion for your carbureted engine, fix your crosshairs on the Sniper 2. It is a great all-in-one TBI kit. **ACP**

15. Programming the ECM is a breeze; just answer a few questions and that's it, just 10 steps.

16. You get a few gauges on the handheld too, which is nice. We should have opted for the 5-inch screen, which can replace the entire gauge panel.

17. All done. The engine fired up on the first crank and needed no adjustments.



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BY NICK LICATA ■ IMAGES BY LUKE MUNNELL

FAMILY DUES



JOSE YBARRA'S **1969** CHEVELLE

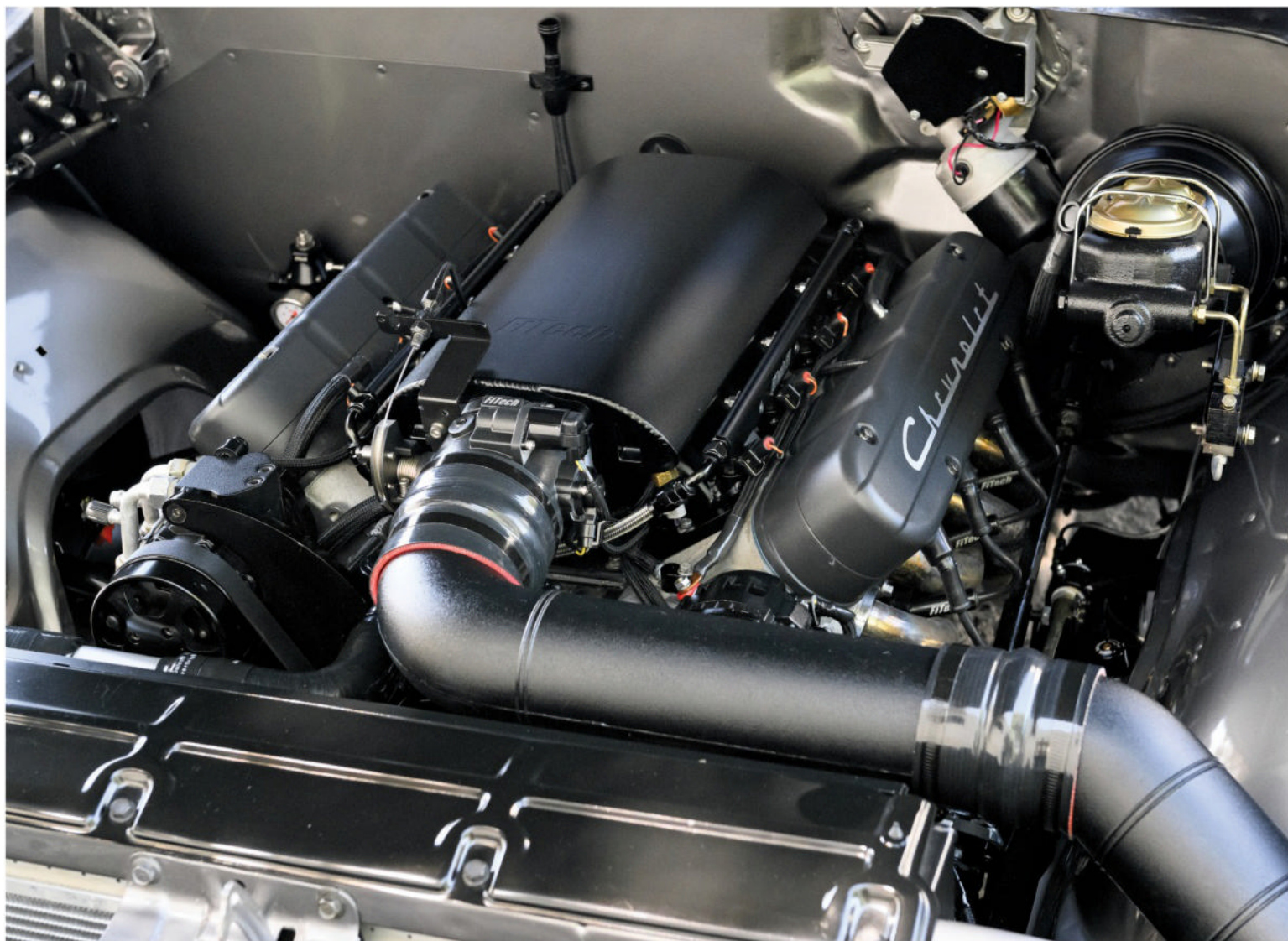
The 1969 Chevy Chevelle remains one of the most iconic muscle cars ever produced—a sleek, aggressive classic that has certainly stood the test of time. For Jose Ybarra of Corona, California, it was a canvas for connection. “I’ve always been a fan of Chevelles—the ’69 in particular has always stood out to me,” Jose confirms. “It’s one of those cars that both my sons and I really connect with. It has everything we were looking for: an old-school sporty look, and it has that classic muscle car presence—the perfect platform for us to bring our shared vision to life.”

Jose has been around cars his whole life. Growing up he remembers watching his uncle and older brother working under the hood of his dad’s 1971 Charger. “My dad wasn’t much of a mechanic,” Jose recalls. “It was usually my uncle who was wrenching, with my older brother helping out.”

With the 1969 Chevelle being a shared favorite for Jose and his sons, Jonathan and Jay, a comprehensive search led to one that fit the bill. It looked clean, appeared to have good bones and satisfactory sheetmetal—a good starting point for their project.







Once they tore into it, though, they came across more rust than they had expected, mainly in the roof and a few other areas threatening to derail their progress. But the Ybarra crew wasn't about to give up. They rolled up their sleeves, brought in Jose's brother for backup, and pushed ahead. The unexpected rot added some time to the project, but they remained committed to building the car they had always wanted.

Underneath its clean exterior, Jose's Chevelle packs serious power. The heart of the beast is a 364ci LQ4 V-8 built by Montiel Auto Service in Stanton, California. This powerplant relies on some factory internals brought to life with a Brian Tooley Racing LS1 Stage 3 camshaft giving the Chevelle plenty of street cred. With GM aluminum heads, FiTech Rebel LS induction and fuel injection, the Chevelle churns out a balanced, street-friendly 489 hp. Bous Performance headers feeding a 3-inch stainless exhaust system with MagnaFlow mufflers produce an aggressive growl to coincide with the Chevelle's healthy power output.

The engine bay is dressed up with Bous Performance valve covers and includes a supporting cast that features a Top Speed Performance water pump, Champion aluminum radiator Derale fans, and FiTech ignition

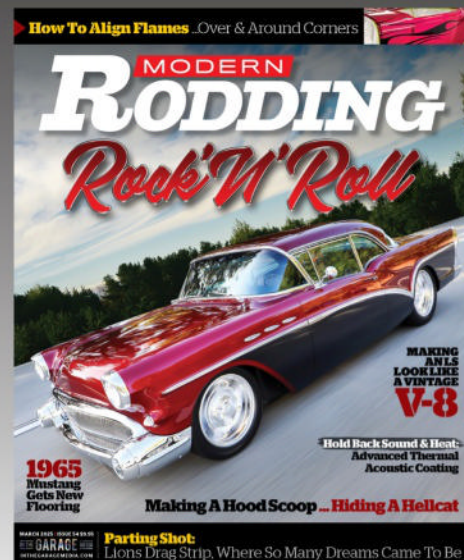
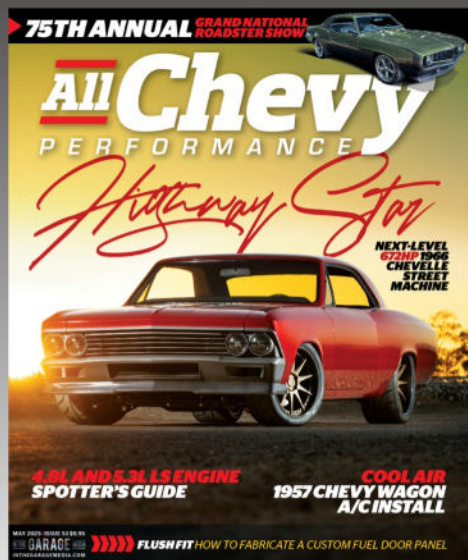
components. Eddie Motorsports hood hinges add some flair and conform with the clean theme underhood.

Behind the engine sits a 4L80E automatic transmission built by A Transmission Clinic of Corona, California, connected to a Driveshaft Pro driveshaft and a stout 12-bolt rearend packed with Eaton Truetrac limited-slip differential and 3.73 gears—perfect for street cruising and plenty capable of handling Jose's occasional heavy right foot when it comes time to put on a little smoke show.

The Chevelle's stance and handling are just as important as its muscular demeanor. The factory chassis was upgraded with Bous Performance control arms and spindles up front, paired with Aldan American coilover shocks and springs for improved ride quality and handling. The rear was treated to matching Aldan American coilovers. Steering is dialed in with a Borgeson steering box, giving the car improved road response and driver feedback.

Bous Performance 12-inch rotors and four-piston calipers provide confident braking. The car rolls on a staggered set of American Racing VN514 wheels—20x8.5 up front and 20x10 out back—all wrapped in sticky Nitto tires that offer a perfect balance between grip and style.

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Inside, the black leather upholstery was expertly handled by Gamino Upholstery, retaining the factory seats and dash while enhancing comfort and durability. Modern tech includes a Dakota Digital gauge cluster, a Bluetooth entertainment system by Audio Developments, and a punchy sound system consisting of Orion amps, Infinity speakers, and a Kicker 12-inch subwoofer—all wired and installed by Jose's own Ybarra Customz shop. The A/C system from Old Air Products ensures comfort on hot SoCal cruise days, and the cabin is finished off with Bous Performance steering components and Eddie Motorsports pedals for a custom yet cohesive look.

The exterior keeps things pristine, clean, and classic. RR Autoworks, also in Stanton, handled the bodywork and sprayed the striking PPG Gray Metallic paint, with painter Rafael Rodriguez bringing Jose's vision to life. Stock bumpers, grille, headlights, and taillights keep the vintage vibe intact, while fresh plating and panel alignment elevate the presentation.

Jose admits that if he had a chance to do it all over again, he would have started with a better candidate. A supercharger and six-speed transmission might also be in the mix for the future, but for now he's truly impressed how the car came out, and how he enjoyed spending time working on the car with his boys. "It wasn't easy, but taking on a project like this and working alongside my sons made the experience more meaningful," Jose says. "The most memorable experience was when we fired it up for the first time. The sound of that engine coming to life was remarkable. I'll never forget the look on my sons' faces when they heard that engine roar. In fact, we all had the expression of shock, excitement, and pure joy. We're incredibly proud of what we accomplished in just under two years. The attention the car gets at shows and on the road makes all the hard work worthwhile, giving us a real sense of pride every time we take it out." **ACP**



TECH

OWNER: Jose Ybarra, Corona, California
VEHICLE: 1969 Chevelle

Engine

TYPE: LQ4
DISPLACEMENT: 364 ci
COMPRESSION RATIO: 10.5
BORE: 4.040 inches
STROKE: 4.00 inches
BUILDER: Montiel Auto Service (Stanton, CA)
MACHINE WORK: Montiel Auto Service
CAMSHAFT: Brian Tooley Racing LS1 Stage 3, 231/242 duration, 0.617/0.592-inch lift
CYLINDER HEADS: GM aluminum
INDUCTION: FiTech Rebel LS
FUEL INJECTION: FiTech
IGNITION: FiTech
EXHAUST: Bous Performance headers, 3-inch stainless exhaust, MagnaFlow mufflers
VALVE COVERS: Bous Performance
ACCESSORY DRIVE: Top Speed Performance
ANCILLARIES: Top Speed Performance water pump, Derale fans, Champion aluminum radiator, FiTech air cleaner, Eddie Motorsports hood hinges
OUTPUT: 489 hp at 6,000 rpm, 430 lb-ft at 5,000 rpm

Drivetrain

TRANSMISSION: 4L80E by A Transmission Clinic (Corona, CA)
DRIVESHAFT: Driveshaft Pro
REAR AXLE: 12-bolt, Eaton Truetrac limited-slip posi, 3.73 gears

Chassis

CHASSIS: Factory
FRONT SUSPENSION: Bous Performance upper and lower control arms, Bous Performance spindles, Aldan American coilover shocks, Aldan American springs, Borgeson steering box
REAR SUSPENSION: Aldan American coilover shocks
BRAKES: Bous Performance 12-inch rotors, four-piston calipers

Wheels & Tires

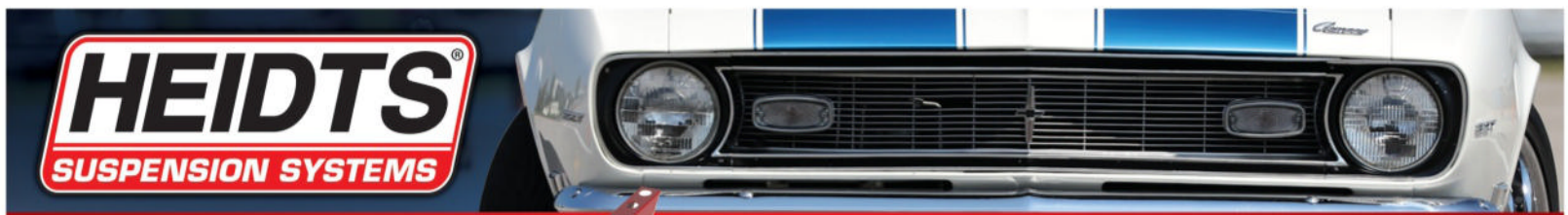
WHEELS: American Racing VN514, 20x8.5 front, 20x10 rear
TIRES: Nitto

Interior

UPHOLSTERY: Black leather
INSTALLATION: Gamino Upholstery
DOOR PANELS: OPGI
SEATS: Factory
STEERING: Bous Performance steering column and steering wheel
PEDALS: Eddie Motorsports
DASH: Factory
INSTRUMENTATION: Dakota Digital
WIRING: Ybarra Customz
HVAC: Old Air Products
ENTERTAINMENT SYSTEM: Audio Developments Bluetooth receiver, Orion Amps, Infinity speakers, Kicker 12-inch sub
INSTALLATION: Ybarra Customz

Exterior

BODYWORK AND PAINT: RR Autoworks (Stanton, CA)
PAINTER: Rafael Rodriguez
PAINT: PPG Gray Metallic
GRILLE: Stock
BUMPERS: Stock
HEADLIGHTS: Stock
TAILLIGHTS: Stock
PLATING: RR Autoworks



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1.



1. Gary Tackett's 1967 Nova Super Stocker just coming off the line at Pomona—you can see the driver side wheel just about to leave the ground. (Photo Dave Kommel)

STRAIGHT TALK ON BUMPSTEER

BY TONY THACKER ■ IMAGES BY THE AUTHOR

Bumpsteer is one of those automotive terms that everybody uses but few understand. Luckily for us, our good friend Rick Lefever took on the task of minimizing the bumpsteer in Gary Tackett's 1967 Nova Super Stock C Modified race car.

Bumpsteer is a situation whereby the car steers itself (even when the steering wheel is not being turned) because incorrect steering geometry causes the toe to change as the wheel goes up and down.

"Gary was experiencing some bumpsteer on the track," Lefever says, particularly when he came back to earth from a wheelie. Because the toe-in was out, the car was unpredictable.

In the Super Stock class, cars must retain the stock front suspension, including the stock A-arms, however, they can be fitted with rack-and-pinion steering, which was the case in Tackett's Nova. Like most applications, Tackett's Nova was fitted with a '70s Pinto-style rack. The shocks and the upper shock mounts also have to remain in the stock location.

"Locating the rack and setting the steering geometry is something that ideally should be done during the build," Lefever says. Because the location of the rack is extremely important, however, in this case the car was already built and therefore some compromises had to be made, otherwise we would be into a huge task relocating the rack, and that just wasn't possible.

"Drag racing exaggerates this situation," Lefever continues. "Because as the car launches it causes the wheel to travel from stock ride height on the start line to full drop as it lifts the front, to full compression as it returns to earth—all in a matter of seconds. The wheel travels through a large arc and when it comes down it needs to be pointing where you want the car to go.

In the case of Tackett's Nova, the wheels traveled a total a 3½ inches from top to bottom, and the toe-in varied from 1 inch at the top to 1/8 inch

at the bottom—a substantial change of 7/8 inch. Ideally the toe-in should be 1/16 inch either side—1/8-inch total.

In Lefever's world there are three relatively simple ways to check your toe, and each takes patience as you will invariably have to go back and forth making small adjustments to get it correct. The three methods employ string, a trammel, and a bumpsteer gauge.

Lefever admits that his string method is somewhat tedious and time-consuming, but in his opinion, and he's been doing this for 40 years, if you are careful, it's very accurate, and it's cheap because you don't need any special tools or investment—just time and string.

The preparation for measuring and ultimately adjusting toe is the same for all three methods described here. [ACP](#)

2.



2. Seconds later and the Nova is in the "up" position. Upon its return to earth, incorrect toe-in, that varied from 1/8 to 1 inch, can cause an unexpected change in direction. (Photo Dave Kommel)

THREE WAYS TO ENSURE PROPER TOE



3.

Rick Lefever explains how the length of the tie rod and its relationship to the A-arms and the rack can cause the toe to change drastically as the wheel arcs through its travel.



4.

Before Lefever tackled the bumpsteer problem, he weighed the car in at 3,200 pounds. Meanwhile, his scales offer a firm support for taking measurements.



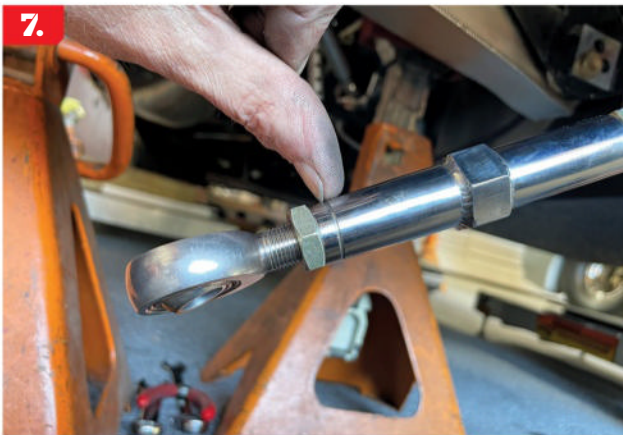
5.

Lefever removed the shocks and springs so that he could easily move the wheel up and down through its arc. This is a view of the driver side looking up toward the upper shock mounting.



6.

One of the first things Lefever did was fabricate left- and right-threaded steel tie-rod adjusters, enabling him to more easily and accurately adjust the toe. Previously, the tie-rod adjusters were both righthand thread and made of aluminum.



7.

Typically, a lefthand threaded component is identified by a small groove, such as the one Lefever is indicating here at the end of the tie-rod adjuster.



8.

Here, Lefever uses his caliper to measure the thread engagement of the tie rod just to make sure he had enough adjustment before starting the measuring process.



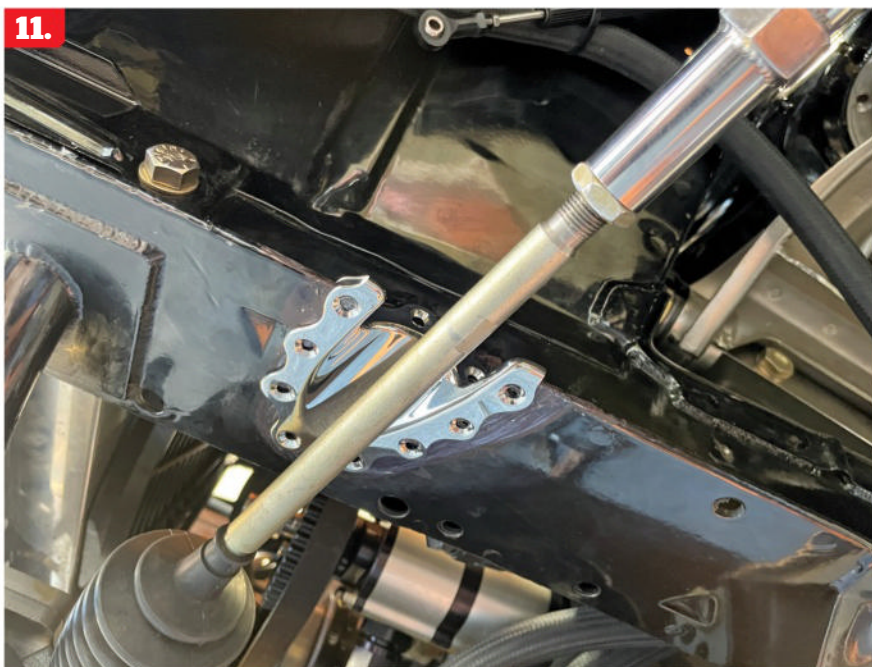
9.

Something that Lefever had to do that you probably won't is re-notch the frame because the cut-out for the tie rod was in the wrong location, enabling the tie rod to hit the frame.



10.

Here you can see where Lefever has moved the notch to align with the travel of the tie rod. It's attention to detail like this that will ultimately give you a good-handling car.



11. Attention to detail are these beautiful polished stainless steel, half-round cups that neatly disguise the notches in the frame for the tie rods.

METHOD 1

12. To begin, Lefever lifts each wheel through its full length of travel from top to bottom (shown). The wheels were found to have 3½ inches of travel and the toe varied from 1 to 1/8 inch at the bottom.



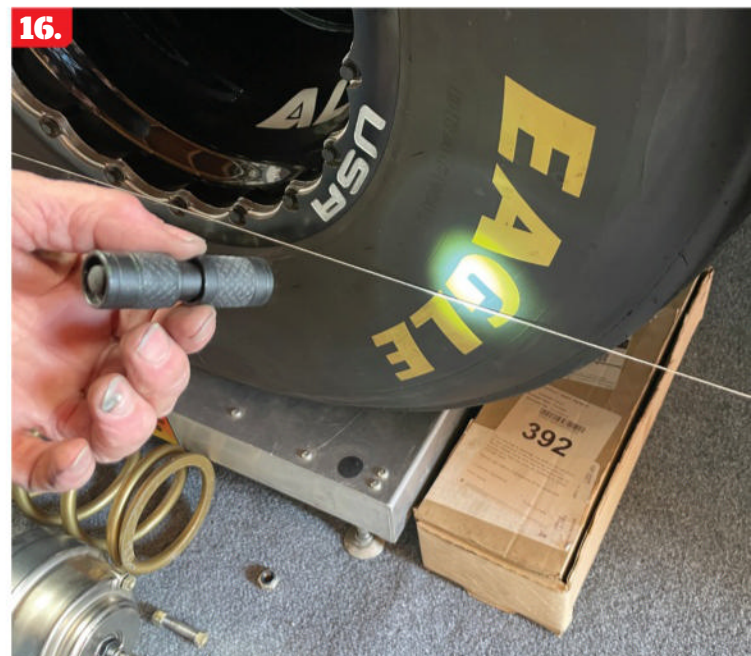
13. Method numero uno is accessible to everybody, as all you need is string, an accurate measuring device (even a good tape measure will work), and two jackstands.

14. Lefever used a small piece of ¼-inch green masking tape to mark the centerline of the wheel so that as he goes through the measuring process the wheel is always in the same location.



15. The string was wrapped around the rear tires and tightly secured to the ladder bar. The other end of the string is secured to an axle stand placed 5 to 6 feet in front of the car.

16. Using a small flashlight, Lefever made sure that the string was exactly parallel to the rear tire. This entails moving the front jackstand left and right until the string is perfectly located.





17.



18.



19.

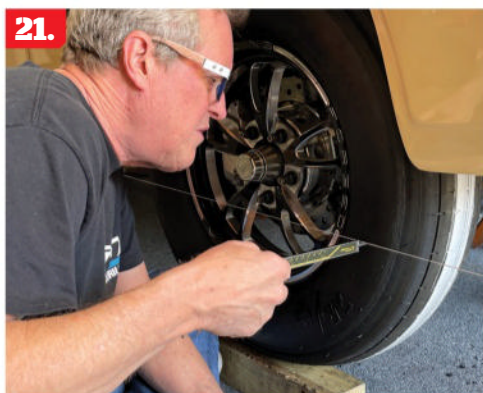
17. Using his Absolute Digimatic digital caliper Lefever measures the distance from the string to the tire at ride height. Care is needed to not move the string, otherwise your measurements will be off.

18. After measuring the rear of the front tire, another measurement was taken from the front of the front tire. The difference between the front and the rear indicates the toe—in or out.

19. Having determined the difference, Lefever twists the tie-rod adjuster to lengthen or shorten the tie rod. In this case, the tie rod was adjusted until the toe was $\frac{1}{16}$ -inch in.



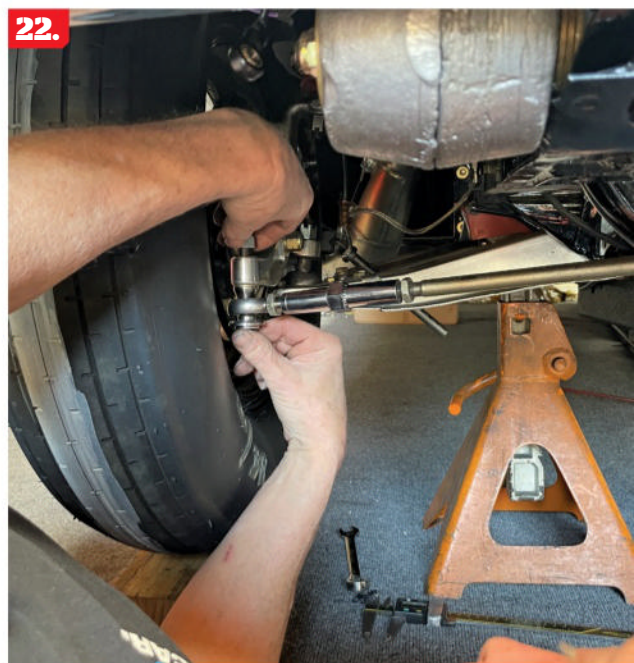
20.



21.

20. Having adjusted the tie rod, Lefever carefully lifted the wheel through its travel arc from bottom to top—a total of $3\frac{1}{2}$ inches. The toe varied from 1 inch at the top to $\frac{1}{8}$ inch at the bottom.

21. The measuring process was repeated at both the rear and the front of the tire with extreme caution as to not move the string causing a distorted measurement.



22.

22. To adjust the length or arc of the tie rod, Lefever installs a small washer between the rod end and the steering arm. Once finalized, the washer was replaced with an accurately machined spacer.



23.

23. A close-up of the washer located between the rod end and the steering arm. A $\frac{1}{16}$ -inch washer changes the toe by approximately 0.080 inch or 80 thou.

24. Once the correct thickness of the spacer had been determined, Lefever made them out of stainless (left) replacing the aluminum ones. He noted these spacers should be as short as possible. If you have to put more than $\frac{1}{4}$ -inch spacer between the tie-rod end and the steering arm, then you should move the rack as a long spacer will put too much load on the bolt. This is the reason that this work should be done at the time of the chassis build and not after the car is built.



24.

25.



25. Once the passenger side was deemed to be as close as possible given the compromises caused by the location of the rack, Lefever moved to the driver side and repeated the process.

METHOD 2: TRAMMEL

26. A trammel is a measuring device consisting of nothing more than a stick or a piece of rigid tube with two adjustable arms, or trammel points, attached to either end. It's not as simple as string but you might find it easier to use.

26.



27.



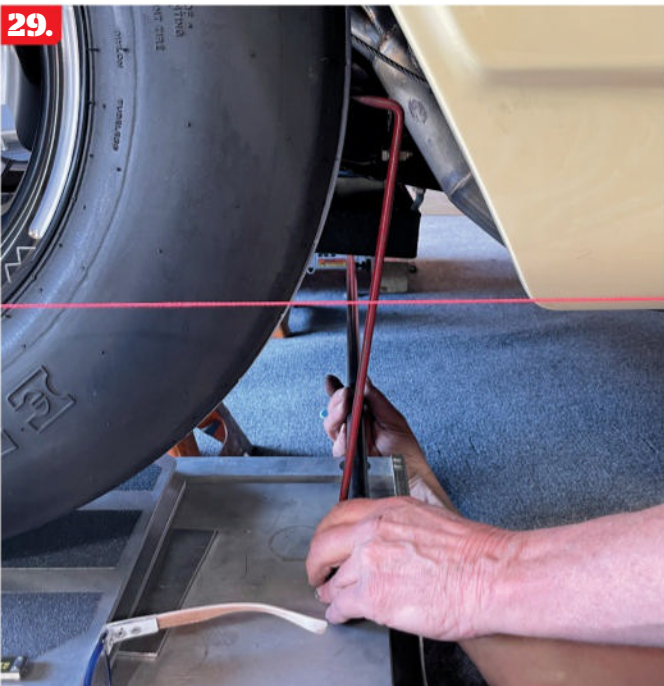
27. Lefever began by marking the center of both front tires with white shoe paint and then marking the centerline of each tire with a carefully positioned scribe mounted in a V-block.

28. Lefever used his scales as a firm base on which to mount the trammel and then placed the fixed end point on the exact centerline of the tire as seen here on the driver side front tire.

28.



29.



29. After measuring the front, Lefever moved the trammel to the rear of the tires and again measured the distance between the scribed lines. The difference between front and rear is the toe—either in or out.

30. With the trammel re-positioned back in front of the tires, Lefever was able to determine the toe and adjust accordingly. Like the string method, the trammel method takes time and patience.

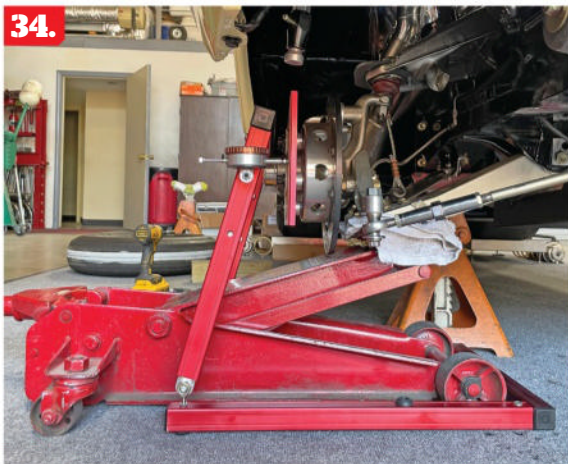
31. Having determined whether the tie rod needed to be lengthened or shortened, Lefever adjusted the length by turning the adjuster out to lengthen or in to shorten.

30.



31.





METHOD 3: BUMPSTEER PLATES

32. There are several companies producing kits for measuring bumpsteer. Lefever decided to try this kit from Longacre Racing products. The kits start at around \$300 and go up to \$500 for the digital version, which is what Lefever purchased.

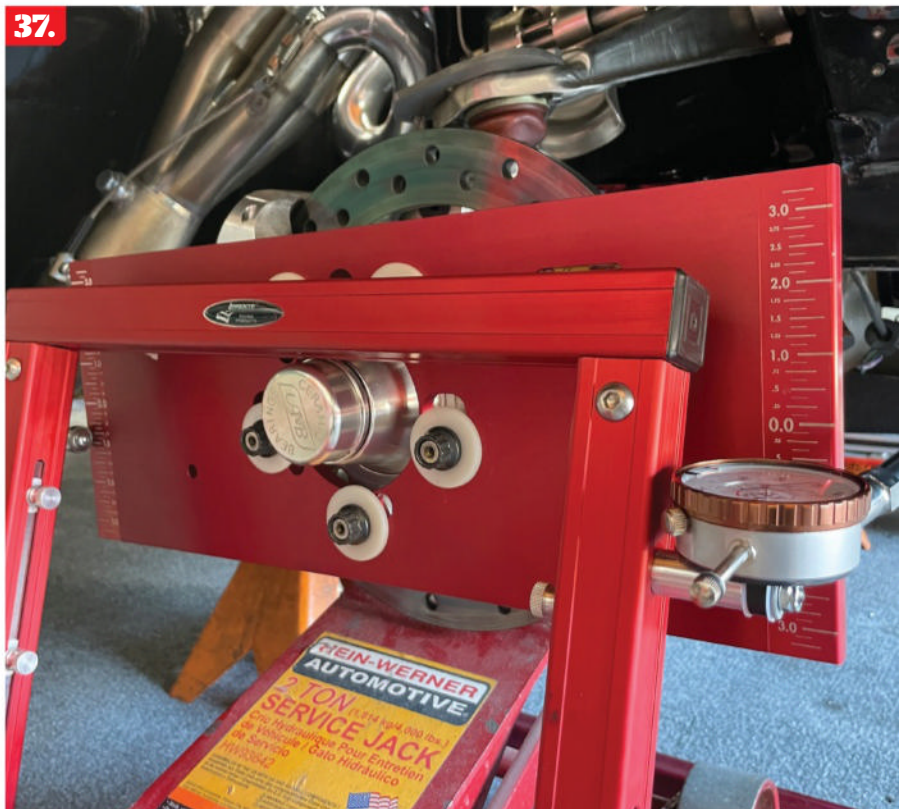
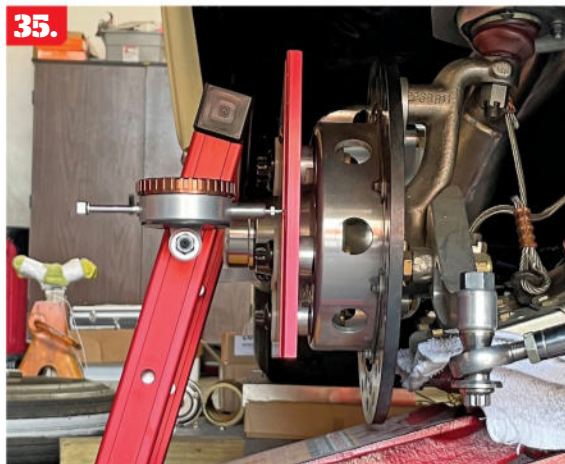
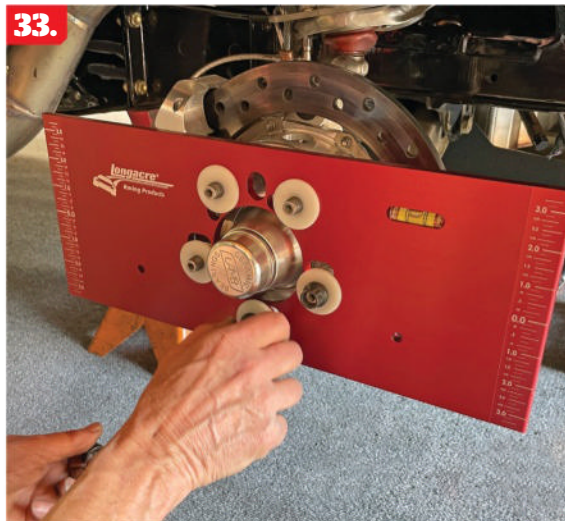
33. To use the Longacre bumpsteer gauge kit, you have to remove the wheels as well as the shocks and springs. The kit comes with this sturdy calibrated $\frac{3}{8}$ -inch, T6 billet aluminum plate that bolted on using the wheel studs.

34. The bumpsteer gauge frame was positioned with the U-section under the car so that a floor jack could be installed in order to lift the suspension through its travel.

35. Lefever set the car ride height and positioned the frame so that the dial indicator was centralized at the "zero" position on the plate.

36. The suspension was then positioned at the bottom of its travel so that Lefever could measure the toe there.

37. Finally, using the jack, the suspension was lifted to the top of its travel so that the toe could be measured a third time. Unfortunately, at the top of the travel the spindle was very close to the frame. Nevertheless, Lefever was able to get his measurement.



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BY CHUCK VRANAS ■ IMAGES BY THE AUTHOR

TIME-WARP TRIBUTE

ALL CHEVY PERFORMANCE [66] VOLUME 5 • ISSUE 59 • 2025

DON FARDIE'S DAY TWO 1966 NOVA 100-SERIES WAGON

Without a doubt, one of the most iconic vehicles to roll off the assembly line and onto our roadways has to be the station wagon. Fueling a passion of exploring America through its expansive panoramic highways, it allowed families to experience travel like never before. Serving as a backbone for our culture for decades, it's seen service as a family hauler, grocery getter, load-in for drive-in movies, a business support vehicle, and even taken down dragstrips. The 1966 Chevy II 100-Series wagon laid out across our pages, owned by Don Fardie of Lakeville, Massachusetts, showcases plenty of Day Two style along with a great story to tell about its creation.

For Don, stepping into the deep end of the performance world began as early as he can remember, starting in the home garage helping his older brother, Ken, wrench on his sleeper, big-block-powered 1969 Chevy Nova. From there the pair spent plenty of time running the 'strip in downtown Brockton, which was a hotbed for late-night street racing, looking for challengers as well as at the eighth-mile drags in Norwood. By the time Don earned his license, the first set of wheels he landed was a 1957 Chevy two-door station wagon purchased for \$75 to serve as his high school ride, creating a fascination with long roofs. From there, several hop-ups passed through the shop, including a wicked 1967 Chevy Nova that he originally built to compete in NHRA F/S Stock Eliminator class with a 327/275hp four-speed combination. After holding the National Record from 2007-2009, he updated the car to run as a Nostalgic Gasser with a Shafiroff 427ci small-block linked to a Jerico four-speed besting the quarter-mile at 10.0 at 130 mph.



Inspiration for the current build harkens back to his early teens when he would regularly help his grandfather on Saturday mornings by delivering eggs to merchants in downtown Boston. The treat was that they would cruise out and back in a Mist Blue 1966 Chevy II Wagon while sharing endless stories and jokes, forever creating a bond between them. He always remembered these special times and wanted to build a tribute to honor him with a Day Two twist of how he imagined modifying the wagon back in the day. Fate works in mysterious ways and not long after making the decision to start looking for a suitable base, he stumbled upon one languishing in a town nearby. With the scarcity of what's left of 1966 Chevy II 100-Series wagons in general, the odds of locating one so close in the exact color you're hoping for can leave you awestruck. Without wasting a second, he struck a deal and hauled the remains back to his shop for review.

Initially, he had hoped to do a simple patina build, however once discovering that the car had been thrashed within an inch of its life, the job morphed into a full rotisserie restoration. After disassembly, Don outlined the path to recovery, starting with the entire body structure

and related parts being sent out for blasting. What returned was not for the faint of heart, showing the amount of abuse was indeed extreme. Working with a great team of friends, including Dennis Plogger, Jason Enos, and Phil Sherman, they started by restoring the factory unibody where areas had deteriorated due to extreme rust.

Concentrating underhood, various sections of the doghouse were fabricated to repair the structure as well as focusing out back on the unibody. From there a call went to Ground Up Motors for a replacement floorpan as well as rockers and driver side lower quarter-panel. A new driver side rain gutter was fabricated, along with repairs done to the lower tailgate and surrounding areas. The body was then metal finished with all gaps set to perfection and sent over to Sutherland Auto Body in Chicopee, Massachusetts, to make everything razor-sharp before laying down the immaculate PPG 1966 GM Mist Blue vibe. The final update was crafted by Brian Chainay (late) of Chainay Kustoms who designed a Class 4 trailer hitch hidden behind the license plate so he could tow his Nova gasser to nostalgia drag race events.





With all the rough fabrication completed, Don focused on refreshing the suspension. Out back, he rebuilt the original GM 10-bolt rearend and packed it with 3.73 gears spinning through an Auburn Gear Grip-N-Loc posi to stock axles. It's suspended in place through the original leaf springs matched to Gabriel HiJackers air shocks and ¾-inch sway bar, both sourced through GM Classics. Up front, a fresh IFS was sourced through GM Classics, including upper and lower control arms, coil springs, tube shocks, 1-inch sway bar, and all related steering components. When it's time to shave speed, a GM dual master with proportioning valve moves fluid through stainless lines to front Aerospace Components 11-inch discs with four-piston calipers and factory rear 9.5-inch drums. For the perfect stance and nostalgic look, a set of American Racing Torq Thrust D wheels, sized 15x6 front and 15x8 rear, wear Cooper CS5 Ultra Touring 195/60R15 and Cooper Cobra 235/60R15, respectively.



TECH ✓

OWNER: Don Fardie, Lakeville, Massachusetts
VEHICLE: 1966 Chevy II Nova Wagon

Engine

TYPE: Small-block Chevy
DISPLACEMENT: 327 ci
COMPRESSION: 11:1
BORE: 4.001
STROKE: 3.25
CYLINDER HEADS: Speedway Motors reproduction aluminum Double Hump Series 461
ROTATING ASSEMBLY: GM forged iron crank, pink rods, 11:1 pistons
CAMSHAFT: GM Duntov 30-30 solid lift
INDUCTION: 1957 Corvette aluminum dual-quad, Edelbrock 500-cfm x 2
IGNITION: MSD Pro Billet distributor, MSD 6AL box, Blaster coil
EXHAUST: OEM GM Ram Horns, Custom 2¼-inch exhaust, MagnaFlow mufflers
OUTPUT: 365 hp at 6,200 rpm, 350 lb-ft at 4,000 rpm

Drivetrain

TRANSMISSION: BorgWarner Super T10
REAR AXLE: GM 10-bolt, Auburn Gear Grip-N-Loc Posi, 3.73 gears, stock axles

Chassis

FRONT SUSPENSION: OEM IFS, coil springs, tube shocks
REAR SUSPENSION: OEM leaf springs, tube shocks
BRAKES: Aerospace Components 11-inch disc, four-piston calipers front, OEM 9.5-inch drum rear, GM dual master, proportioning valve

Wheels & Tires

WHEELS: American Racing Torq Thrust D, 15x6 front, 15x8 rear
TIRES: Cooper CS5 Ultra Touring 195/60R15 front, 235/60R15 rear

Interior

SEATS: Factory bench, modified
UPHOLSTERY: Black vinyl by Hot Rod Interiors by Drew
GAUGES: Factory, Stewart-Warner
STEERING: Factory column, GM Comfort Grip wheel
CARPET: Black loop
SHIFTER: Hurst Competition-Plus, Line-Loc

Exterior

BODYWORK: Dennis Plogger, Jason Enos, Phil Sherman, owner
PAINT: PPG 1966 GM Mist Blue
PAINTER: Sutherland Auto Body





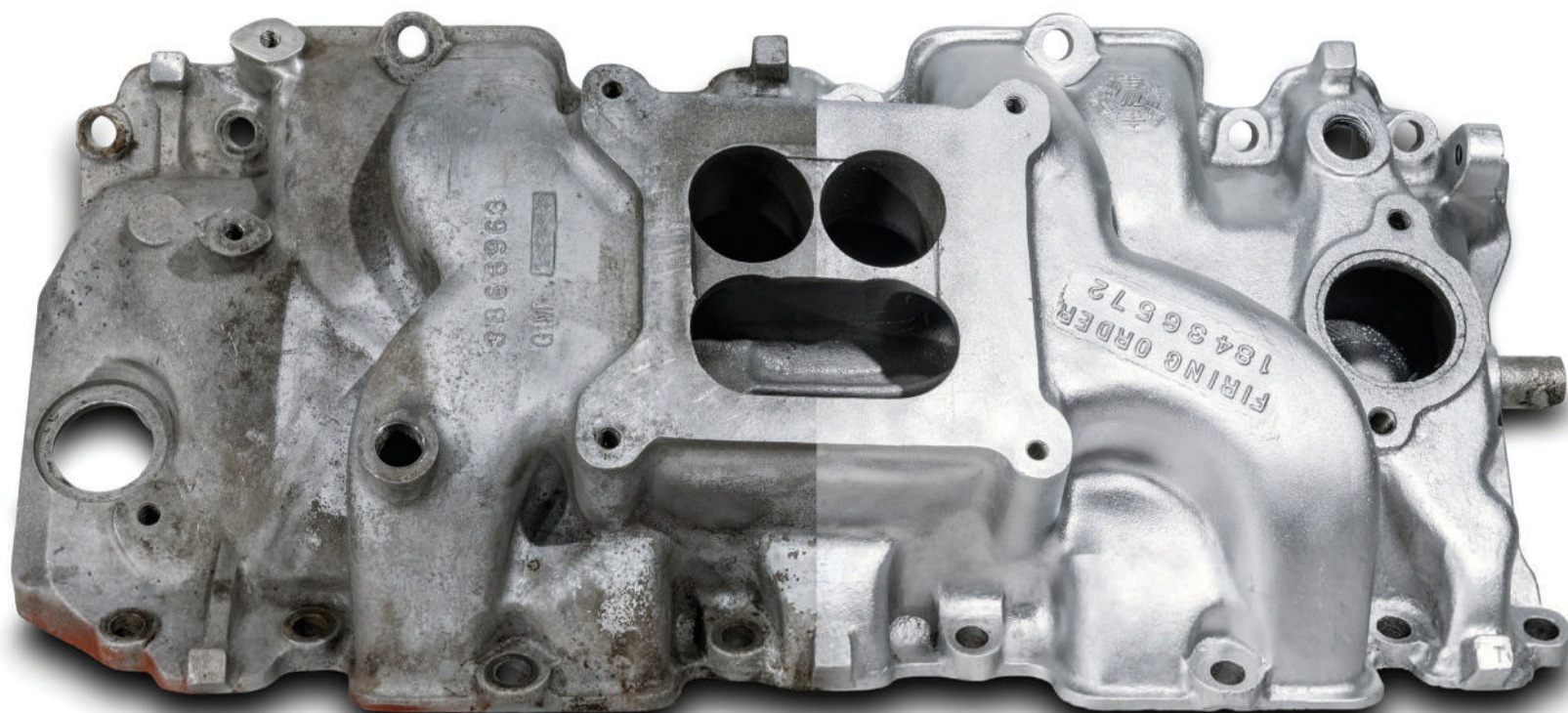
To source the perfect combination of parts for that era-correct punch underhood, Don looked to Ray Helger of Helger Bros. Speed Shop (HBSS) in Little Compton, Rhode Island, for help in rebuilding the original 283. Over the course of many conversations, there were a multitude of options for combining the right vintage parts to make the engine a stout performer as well as a looker from parts available in many of the display cases at the shop. As fate would have it though, the completed 283ci mill would get sidelined thanks to a call from good friend, John Broaden, who recently attended an estate sale and offered up a true crown jewel for the project that couldn't be passed up. It arrived in the form of an N.O.S. L76; still in the crate, a 327/365hp C2 Corvette CE (Counter Exchange) warranty short-block that had been sitting on a shelf since 1969. Talk about the holy grail, you'd have a better chance of finding a diamond in a mountain of sand, so without skipping a beat a deal was made and the engine was delivered to Helger Bros.

The pair got started by freshening up the short-block with new bearings, rings, and ARP bolts. A forged steel crank links to pink rods wearing 11.1 forged pistons getting bumped by a Duntov 30-30 solid lift cam. Up top, a set of Speedway Motors aluminum Double Hump Series 461 heads generate seamless power, especially when matched to a vintage 1957 Corvette aluminum dual-quad intake sourced from HBSS, crowned with a pair of Edelbrock 500-cfm carbs. It all sparks to life through an MSD Pro Billet

distributor with hot gases flowing through original GM Ram Horns headers to a custom 2¼-inch exhaust with MagnaFlow mufflers, all by Paul's Custom Exhaust of Taunton, Massachusetts. Other neat bits include 1965 Corvette valve covers, Powermaster starter, and plenty of attention to detail underhood. A BorgWarner Super T10 four-speed packed with a McLeod Racing Soft Lok clutch assembly and Ram 25-pound steel flywheel move the goods through a custom driveshaft by Long Plain Service of Acushnet, Massachusetts.

The base interior of the 100-Series was basic and spartan as compared to the upper model trim levels. Here, the factory dash was treated to fresh paint and a new top pad from GM Classics, while the original gauges were restored, then complemented by Stewart-Warner dials and a column-mounted tach. The factory column was modified to mimic a standard trans unit, topped by a GM Comfort Grip wheel, while shifts move through a Hurst Competition/Plus shifter. Don had Hot Rod Interiors by Drew of Hanover, Massachusetts, modify the original bench and freshen up the front and back seating with black vinyl while also adding new side panels, black loop carpet, and headliner from GM Classics to complete the restoration.

This is one wicked Day Two wagon that we're sure Granddad would give his seal of approval as it cruises through town. 



HAVE A BLAST

BY JOHN MACHAQUEIRO ■ IMAGES BY THE AUTHOR

In the automotive restoration game, there are a wide range of options when it comes to tackling the various processes involved. What defines a restoration can also be interpreted in many degrees. There are several variables that come into play, and for places that are doing high-end concours restorations the need to bring a car back to how it rolled off the assembly line is the bar that is always set and challenge always faced. Knowledge of the correct finishes on the various parts found on a given vehicle require a certain level of knowledge and experience in their application. Painted items are one part of that equation, however, the range of different bare metal items found on a vehicle usually requires a different approach when it comes to their restoration. The easy path sometimes is to simply find a mint N.O.S. replacement, but that is not always an option. When it comes to aluminum parts, there are various ways that shops tackle their restorations in what they deem as the best solution. We're going to exclusively focus on aluminum parts, and we have the perfect test subject: an L78 intake manifold for a 1965 Corvette that was recently vapor honed at American Muscle Car Restorations (AMCR) in North Kingstown, Rhode Island. They have over the years set the bar to the highest level with many award-winning OEM restorations under their belt. Vapor honing is another tool that they have added to their arsenal of processes that we will be testing on our manifold.

You might be asking, 'What is vapor honing?' You may have heard of it also referred to as wet blasting or slurry blasting. By whatever name you're familiar with, it is a process that utilizes a mixture of abrasive media, water, and compressed air to

clean, polish, deburr, or finish a surface. The choice of abrasive media is critical and depends on the material of the workpiece and the desired finish.

For an aluminum part that is going to be used in an OEM restoration, getting it back to original condition with the correct finish is the desired outcome. The folks at AMCR have switched over to this vapor honing technology to restore aluminum parts, however, prior to the use of this procedure they were getting the same results from a 10-step process that they had developed and perfected. This single-step switch has allowed them to significantly reduce the overall time spent on a given part while still achieving the same results.

The end result with these parts and the reduction in time translates to less manhours used and a cost savings for their clients. **ACP**

VAPOR HONING AN L78 ALUMINUM INTAKE MANIFOLD

1.



1-2. The starting point on this intake prior to placing it in the cabinet to vapor hone was to make sure that it was completely clean and free from any grease. We also did a repair to the rear mounting tab prior to any effort at cleaning. There are some other material issues that we will cover to further facilitate in the process. It is important to ensure on a part like an intake that all surfaces (top and bottom) are grease-free. This will preserve the longevity of the blasting media by reducing contamination. If there is any significant buildup inside the runners the most effective solution is to have the intake hot tanked prior to any vapor honing. This is accomplished by placing the part in a tank filled with a heated, aluminum-safe chemical solution designed to break down carbon, oil, and grime. The solution must be non-caustic or specifically formulated for aluminum to avoid corrosion or pitting. Our test subject had very clear runners with no substantial buildup.

2.



3. Often there will be an item that is not feasible to remove. The rust-covered coolant tube was left in place and vapor honed in the process. The one that was fitted, while rusty in appearance, was quite solid. On an item like this, if it needs to be replaced, it is usually best done prior to any attempt at this cleaning process.

3.



4.



4. Having a clean grease-free surface is fundamental in extending the lifespan of the honing media. On items like intakes, they were often in place when folks painted their engines so overspray ended up on the outer edges, or in some cases the entire manifold. Depending on the amount and thickness of the paint, it is usually a good idea to remove it before vapor honing. One of the most sensible ways if someone is not having a part hot tanked is to chemically strip and remove the paint with a nylon brush, which will not harm the texture of the aluminum surface. The rear section on our intake had some paint, and we opted not to remove it because it was borderline acceptable for the media we would be using.

5.



5. At some point in the Corvette's life someone applied a thin layer of silver on the manifold. What was still in place was very thinly applied, so we opted to leave it as well. It was determined that the extra step to chemically remove the paint wasn't worth the time invested when the vapor honing process would efficiently remove it without any surface degradation.

6.



6. Areas where some rust is present as a result of the galvanic corrosion that takes place when aluminum and steel are in contact with each other was also addressed in the vapor honing process.



7. The cabinet that we used for vapor honing is made in the U.S. from the folks at Vapor Honing Technologies (VHT). They make several different models that are suited to a shop's needs. The model that we used is the VH1000 with a closed-loop system, which suits the folks at AMCR and their needs with the aluminum parts restoration. VHT has all the supplies needed to cover the various types of blasting that can be performed with these cabinets.



8. Because AMCR is exclusively using this process for aluminum restoration, they have opted for glass beads as the abrasive material that best suits that task. Glass beads are non-aggressive and spherical in shape. They clean by impacting and gently removing oxidation, surface dirt, grease, corrosion, or light rust. Glass beads are usually graded by mesh size, which refers to how many openings per inch are in the screen used to sort them. They come in four different grades with the one that AMCR opted to use falling under the very fine/micro finish grade with a mesh size in the 170-325 range. Their size is measured in microns. This grade of beads comes in at a ~90 – 45 µm micron size range, which is ideal for polishing, very light cleaning, and fine detailing that will leave parts with a natural satin or matte finish. The glass beads are sourced from VHT along with the Anti-Microbial Agent that is mixed with the water to minimize the development of fungus from sitting or processing certain parts.

9. The interior of the cabinet has three different hoses. The nozzle brings compressed air, and the wet slurry mix together for the blasting process. The ideal air pressure for glass beads ranges between 40 to 60 psi. For this part, the air pressure was set at 40 psi, which gives the parts a satin smooth finish while still removing light oxidation, corrosion, and any light paint layer.

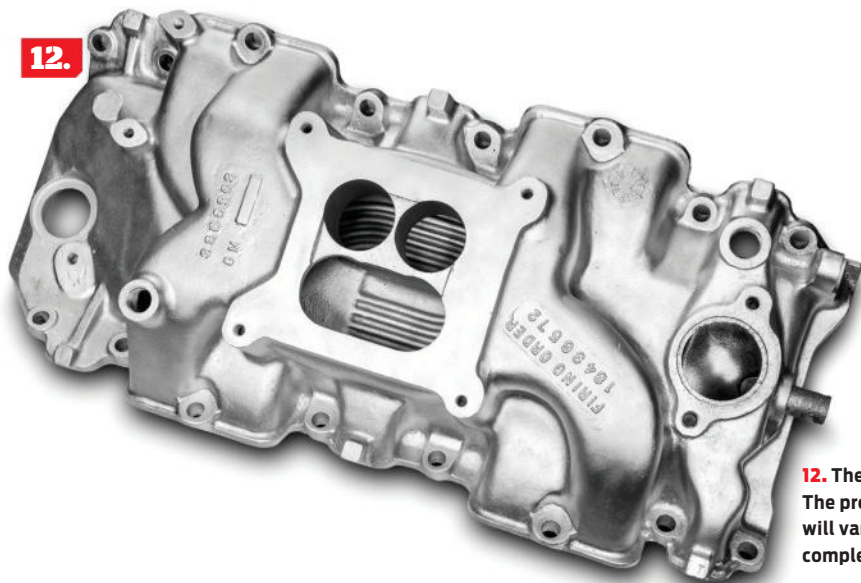


10. With the intake placed inside the cabinet it illustrates the size of the workspace that is available. This is the ideal size for a shop that is dealing with aluminum parts generally found on a car.

11. The blasting process requires a steady movement of the nozzle. The ideal distance when blasting is between 3 to 6 inches in a continuous pattern. This will yield a smooth consistent finish, however, if the movement is not steady, or the distance fluctuates you can end up with what is called "hot spotting." The way to remedy this is to reduce the air pressure down to just the pump pressure after the part has been cleaned and another pass done.



12.



13.



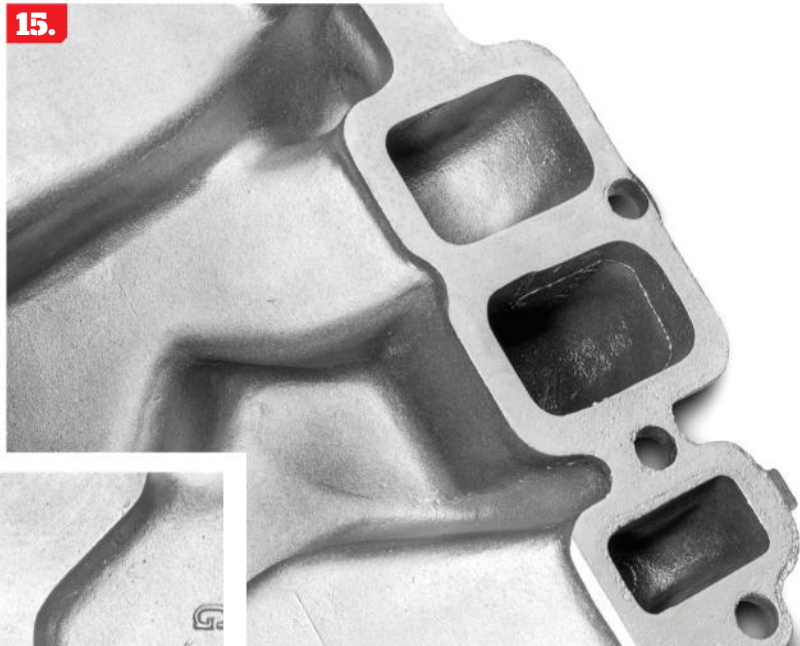
12. The end result of our effort is a part that is restored back to its fresh cast looked. The process of cleaning this part from start to finish took about 40 minutes. This time will vary depending on the size of the part, the amount of cleaning required, and the complexity of the casting.

13. The coolant tube was also vapor honed and the result was the removal of the rust that was initially present. On an item that is prone to rusting, it is recommended that a rust inhibitor is used to prevent it from coming back.

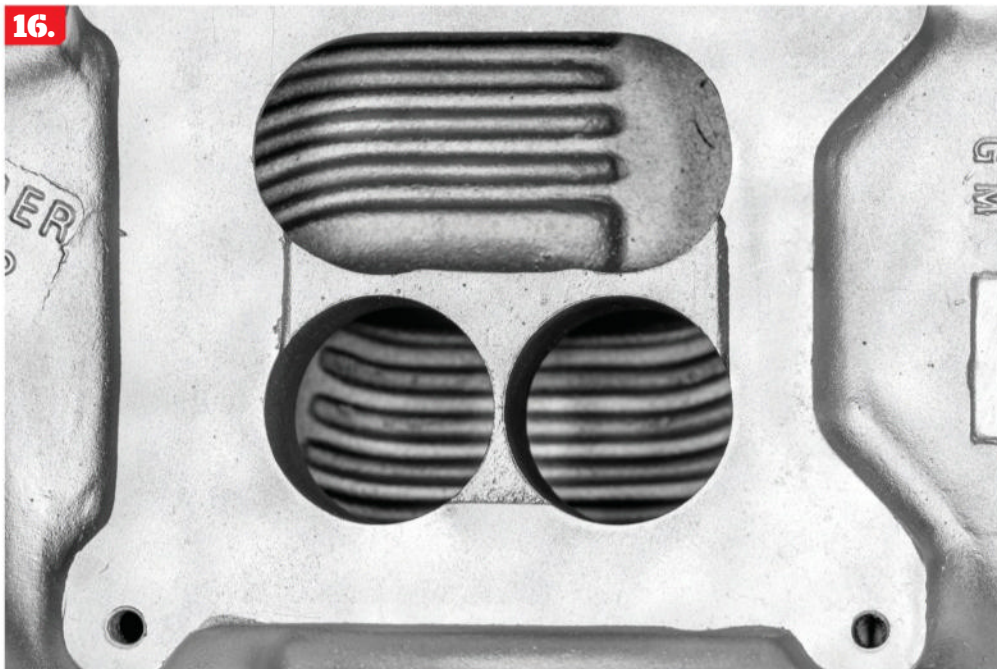
14.



15.



16.



14. This area was lightly painted and vapor honing effectively removed the engine paint. Because of the gentle nature of this process there is no difference in the texture of the finish achieved. The question you might have is if there is any material removed. There is some material that is removed during the vapor honing process, but it is at the micron level. Other types of more aggressive media will significantly remove more material, which will lead to the altering of the original texture of the part. With an OEM restoration, that texture is one of the key elements to preserve.

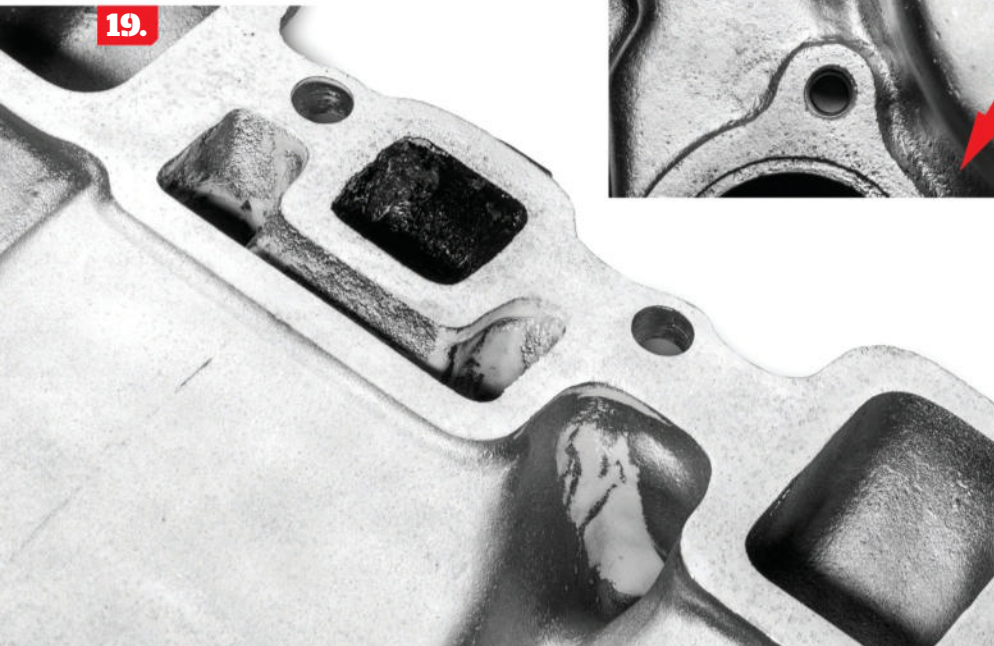
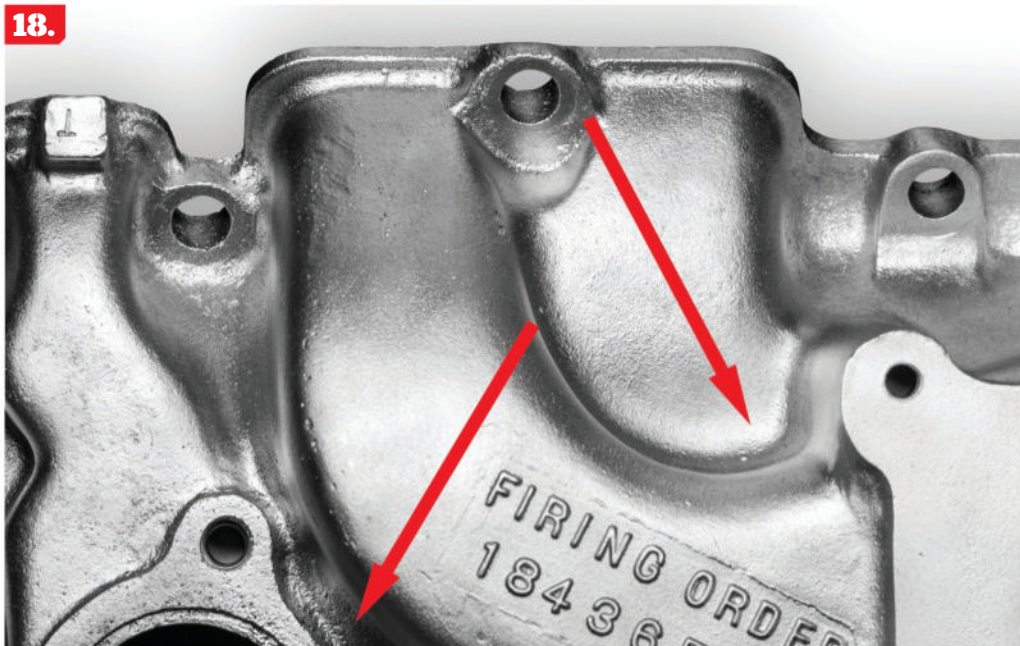
15-16. These two images illustrate the harder-to-reach areas on this manifold. The runners and plenum opening were also honed and the layer of carbon deposits removed.



17. This image illustrates the need to have repairs done prior to any type of cleaning. If the repair is properly done and cleanly blends in with the surrounding material, once the part is cleaned it will blend in seamlessly with the rest of the finish.

18. On a complex part with sharp curves and places where valleys are created because of the shape of the casting, extra effort is necessary to reach those spots. On our manifold it meant stopping and cleaning off the slurry mix several times to check the progress. The fairly clean surface on our intake made that task easier, however, on parts with a greater degree of oxidation and grime will require repeated washing off to check the progress.

19. When the part is pulled from the cabinet it will be wet, and the full effect of the vapor honing process won't be fully visible until it is completely dried. Parts will require extensive cleaning with water. After our intake had dried, we found some of the glass bead media still present inside the runners, which we will address prior to its installation back on the engine.



■ SOURCES

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THE 2025 CAMARO NATIONALS



BY JOHN MACHAQUEIRO ■ IMAGES BY THE AUTHOR

Another year and another Camaro Nationals is in the history books. Once again, the 2025 show came together at the Classic Auto Mall in Morgantown, Pennsylvania. This was the 26th edition, and the partnership that has grown with this indoor and outdoor space continues to deliver the goods with another great gathering. For anyone holding an outdoor show in the Northeast, the unpredictable shifts in the weather forecast can make holding an event somewhat challenging, which was the case for the weekend of the show. A mix of sun and threatening overcast skies with the possibility of rain didn't keep everyone home, but it did have an impact on the final figures. Saturday morning the skies opened up with rain, which impacted the Saturday car count, as some of the folks who typically drive their Camaros to the show opted to stay home. The final registered car count came in at 610.

Those attending the show enjoyed a well-organized schedule of events. Karl Scheffy, the organizer of the event, once again mobilized his crew to help things run smoothly. His local club, the Lehigh Valley Camaro Club, along with several other clubs also volunteered their time. Many of these clubs also take the opportunity to hold their annual get-together and can usually be found under the tents set up throughout the show.

A key component of this show is the ongoing certification judging for the folks who have gone the extra mile to do an OEM restoration, or those who have well-preserved, original, unrestored cars. A group of highly qualified judges tackle the three different levels of judging with the Bow Tie Class, the Legends Class, and the Vintage Class for those with unrestored cars as options. This one aspect pulls in the cream of the Camaro crop because there are always fresh restorations breaking cover or original cars unearthed somewhere.

Other notable activities that take place every year come in the form of a banquet, auction, and a 50/50 raffle that go hand in hand with generous sponsor donations, with the proceeds distributed to worthy causes. This year they surpassed the previous year's total by raising \$15,500 for the Silence of Mary Home for Children and the Bridgeway House.

If you are thinking about attending the show next year, mark your calendars for July 17 and 18 with a kickoff cruise on the 16th. For more information, go to camaronationals.org. 



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CHEVY SLUGGERS



BY TOMMY LEE BYRD ■ IMAGES BY THE AUTHOR

For decades, the National Street Rod Association had a strict age cutoff of 1948, ensuring its events would be pure to the street rod community. As time went on, there was a push to move the cutoff dates to allow a bigger variety of cars and trucks to cruise into the Kentucky Expo Center in Louisville, Kentucky, for the NSRA Street Rod Nationals. The result was a 30-year sliding cutoff, meaning this year's event allowed cars and trucks as new as 1995 to participate. While the name still implies the street rod theme, this event is packed with awesome muscle cars, gassers, and much more. With nearly 10,000 cars and trucks on the property, this event is still going strong in its 56th year in operation.

We rolled into Louisville on Wednesday to prepare for a long weekend of activities and hit the ground running on Thursday morning. A stroll through the swap meet is always interesting, as there are usually a few treasures hidden in the rows of used parts and projects. The vendor hall is a popular escape from the heat and provides a view of many parts manufacturers and vendors within the automotive aftermarket. There are also special display areas inside the vendor building, including the Builder's Showcase in the lobby area. Out back, there is an autocross course running throughout the event, giving people a chance to stretch the legs of their vehicle. The autocross is open to cars or trucks from any year, so the NSRA's 30-year cutoff does not apply in the autocross competition.

Then, of course, there are thousands of vehicles in the parking lots surrounding the Expo Center. We saw cool original-paint survivors, '70s street machines, Pro Touring cars, and so much more. Tri-Five gassers were plentiful, offering lots of paint, suspension, and engine combinations.

Take a look at a selection of our favorite Chevys from the 56th annual NSRA Street Rod Nationals and put this outstanding event on your calendar for the first weekend of August in 2026. [ACP](#)

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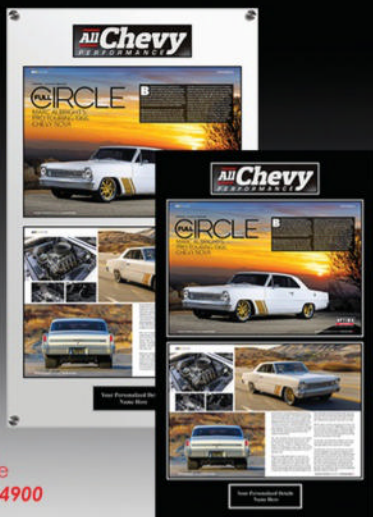
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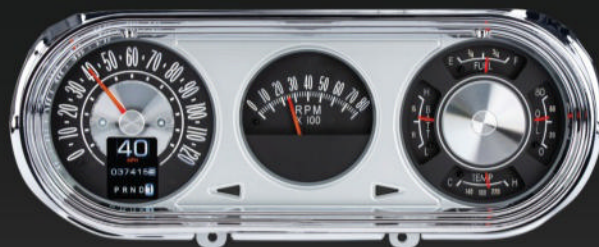


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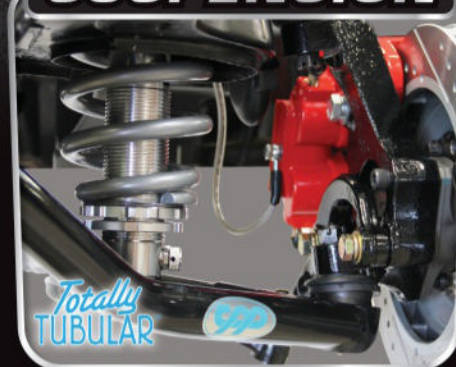
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